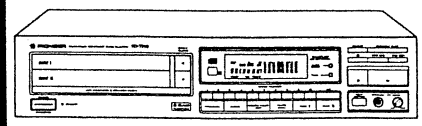
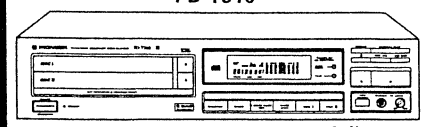
PIONEER®
The Art of Entertainment

Service Manual



PD-T510



PD-T310 (European model)

ORDER NO.
ARP2473

TWIN-TRAY COMPACT DISC PLAYER

PD-T510
PD-T310

PD-T510 AND PD-T310 HAVE THE FOLLOWING:

Type	Model		Power Requirement	Remarks
	PD-T510	PD-T310		
KC	○	○	AC120V only	
RD	○	○	AC110-127V, 220-240V (switchable)	
WPW	○	○	AC220-240V	
WEMXK	○	○	AC220-240V	

- **This manual is applicable to KC, WEMXK, WPW and RD types.**
- **For the following: PD-T510/WEMXK, WPW and RD; PD-T310/WEMXK, WPW and RD, refer to pages 68 – 70.**
- **Ce manuel pour le service comprend les explications de réglage en français.**
- **Este manual de servicio trata del método ajuste escrito en español.**

CONTENTS

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SO APR. 1992 Printed in Japan

1. SAFETY INFORMATION

(FOR EUROPEAN MODEL ONLY)

VARO!
AVATTAESSA JA SUOJALUKITUS OHITETTAESSA OLET ALTTIINA NÄKYMÄTTÖMÄLLE LASERSÄTEILYLLE. ÄLÄ KATSO SÄTEESEEN.

ADVERSEL:
USYNLIG LASERSTRÅLING VED ÅBNING NÅR SIKKERHEDSAFBRYDERE ER UDE AF FUNKTION UNDGÅ UDSAETTELSE FOR STRÅLING.

VARNING!
OSYNLIG LASERSTRÅLNING NÄR DENNA DEL ÄR ÖPPNAD OCH SPÄRREN ÄR URKOPPLAD. BETRAKTA EJ STRÅLEN.

LASER
Kuva 1
Lasersateilyn varoitusmerkki

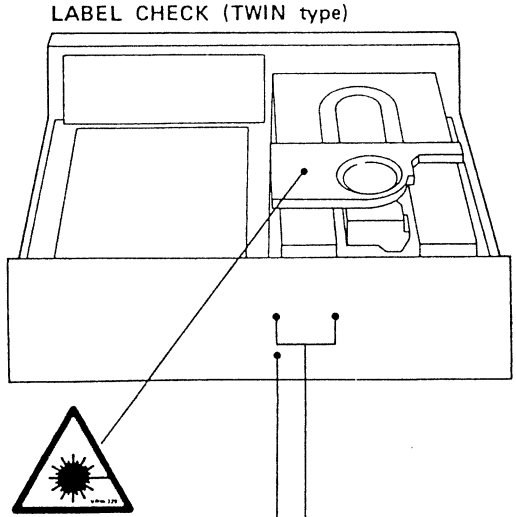
WARNING!
DEVICE INCLUDES LASER DIODE WHICH EMITS INVISIBLE INFRARED RADIATION WHICH IS DANGEROUS TO EYES. THERE IS A WARNING SIGN ACCORDING TO PICTURE 1 INSIDE THE DEVICE CLOSE TO THE LASER DIODE.

IMPORTANT
THIS PIONEER APPARATUS CONTAINS LASER OF CLASS 1.
SERVICING OPERATION OF THE APPARATUS SHOULD BE DONE BY A SPECIALLY INSTRUCTED PERSON.

LASER DIODE CHARACTERISTICS
MAXIMUM OUTPUT POWER: 5 mw
WAVELENGTH: 780-785 nm

LASER
Picture 1
Warning sign for laser radiation

LABEL CHECK (TWIN type)

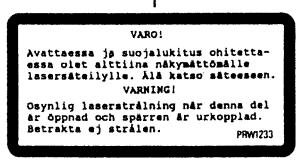


Additional Laser Caution

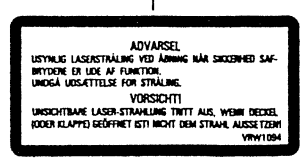
1. Laser Interlock Mechanism
   The ON/OFF (ON : low level/OFF : high level) status of the U (S601) and L (S603) switches for detecting the disc clamp state is detected by the system microprocessor, and the design prevents laser diode oscillation when both switches U and L are OFF (high level).
   Thus, the interlock will no longer function if switches U (S601) and L (S603) are deliberately shorted.
   Laser diode oscillation will continue if pins 2 and 3 of CXA1471S (IC101) are connected to ground or pin 20 is connected to high level (ON) or the terminals of Q101 are shorted to each other (fault condition).

2. When the cover is opened, close viewing of the objective lens with the naked eye will cause exposure to a Class 1 laser beam.

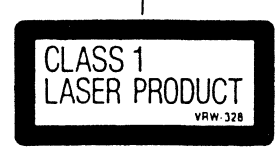
WEMXK type



WEMXK type



WEMXK type



WEMXK type

2. DISASSEMBLY

● REMOVAL OF TRAY I

(1) Set the tray I to the OPEN position by pressing the OPEN/CLOSE button.

Note 1: When openning the tray I manually, insert a forefinger from the groove and rotate the idler gear in clockwise direction, shown in Fig. 1.

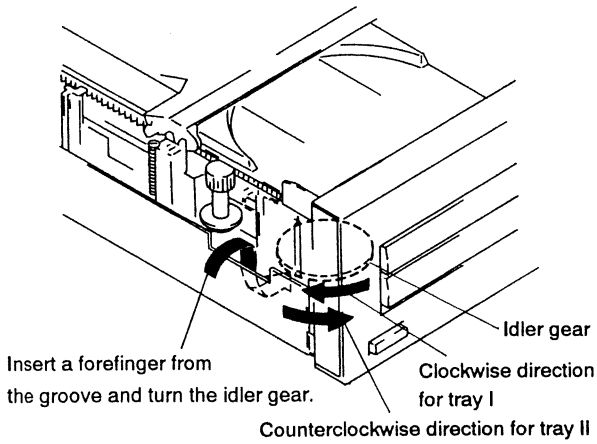


Fig. 1

Note 2: When the idler gear cannot be rotated by way of Note1, it can be done by way of below steps.

(1) Stand the product right side down.

(2) Remove the left insulator (or the foot assembly) on the front.

(3) As shown in figure 2, rotate the idler gear by inserting the screw driver to the bottom hole where the insulator (or the foot assembly) is removed from.

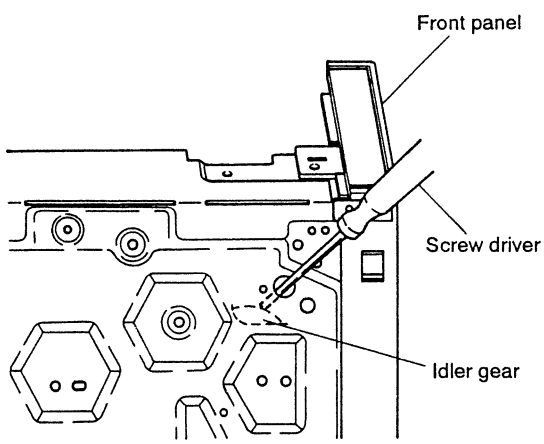


Fig. 2

(2) As shown in Fig. 3 insert a screw driver to the left slit of the tray I and pull out the tray in the direction of the arrow B, while the screw driver keeping to press in the direction of the arrow A.

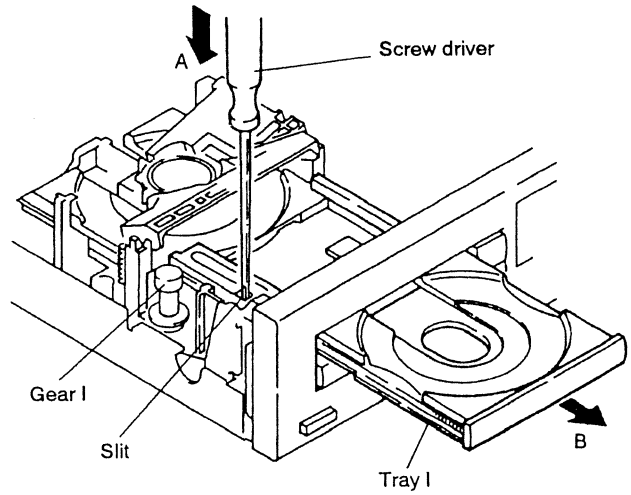


Fig. 3

● REMOVAL OF TRAY II

(1) Set the tray II to the OPEN position by pressing the OPEN/CLOSE button.

Note: When openning the tray II manually, rotate the idler gear in the counterclockwise direction, shown in Fig. 1.

(2) As shown in Fig. 3, insert a screw driver to the right slit of the tray II and pull out the tray in the direction of the arrow B, while the screw driver keeping to press in the direction of the arrow A.

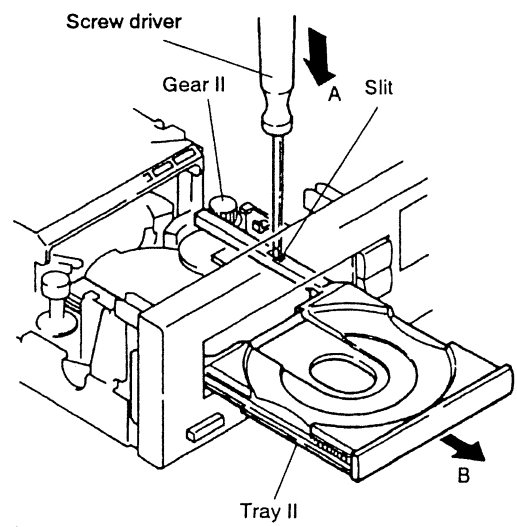


Fig. 4

● MOUNTING OF TRAY I

1. Set the disc II to the clamp position and open the tray I.
2. Align the 1st tooth of tray I to ungrooved portion of gear I, and insert the tray I.

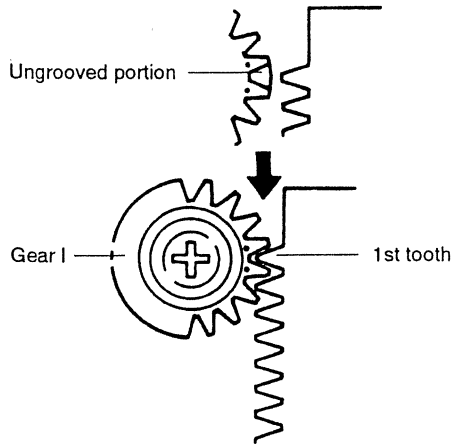


Fig. 5

● MOUNTING OF TRAY II

1. Set the disc I to the clamp position and open the tray II.
2. Align the 1st tooth of tray II to □ marked position of gear II, and insert the tray II.

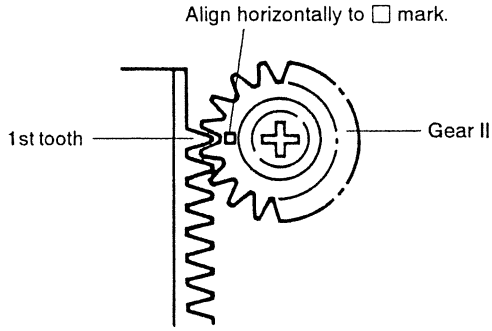


Fig. 6

● MOUNTING AND POSITIONING OF MAIN CAM, FOLLOW GEAR, GEAR I AND GEAR II

Set the following gears to the position as shown by arrows.

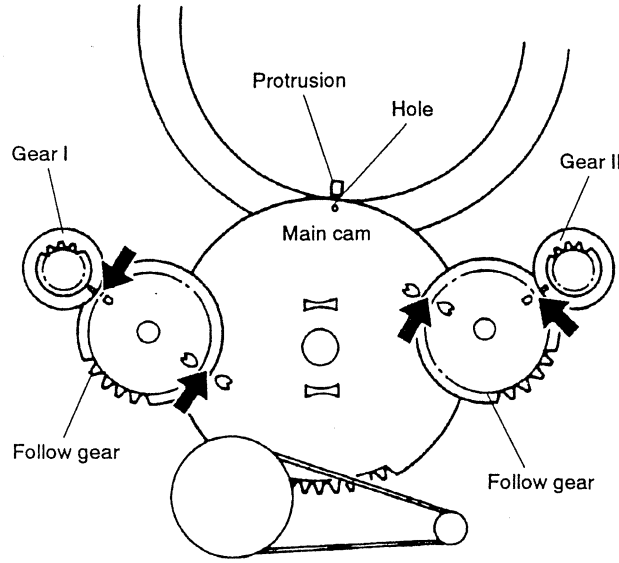


Fig. 7

● MOUNTING OF CLAMPER ASSEMBLY

Mount the clamper assembly by aligning the protrusion portion as shown in the figure.

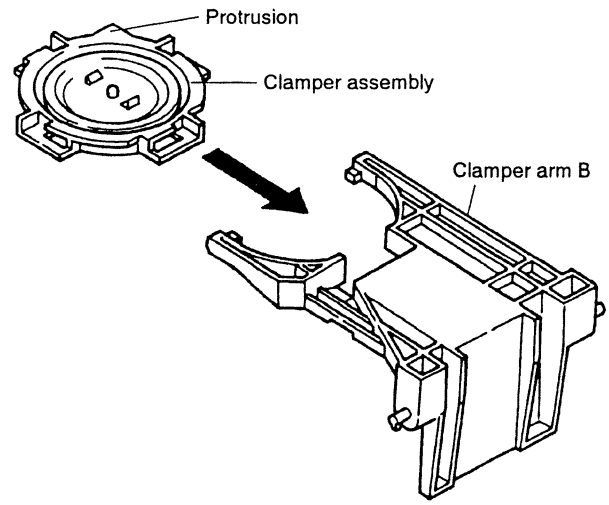
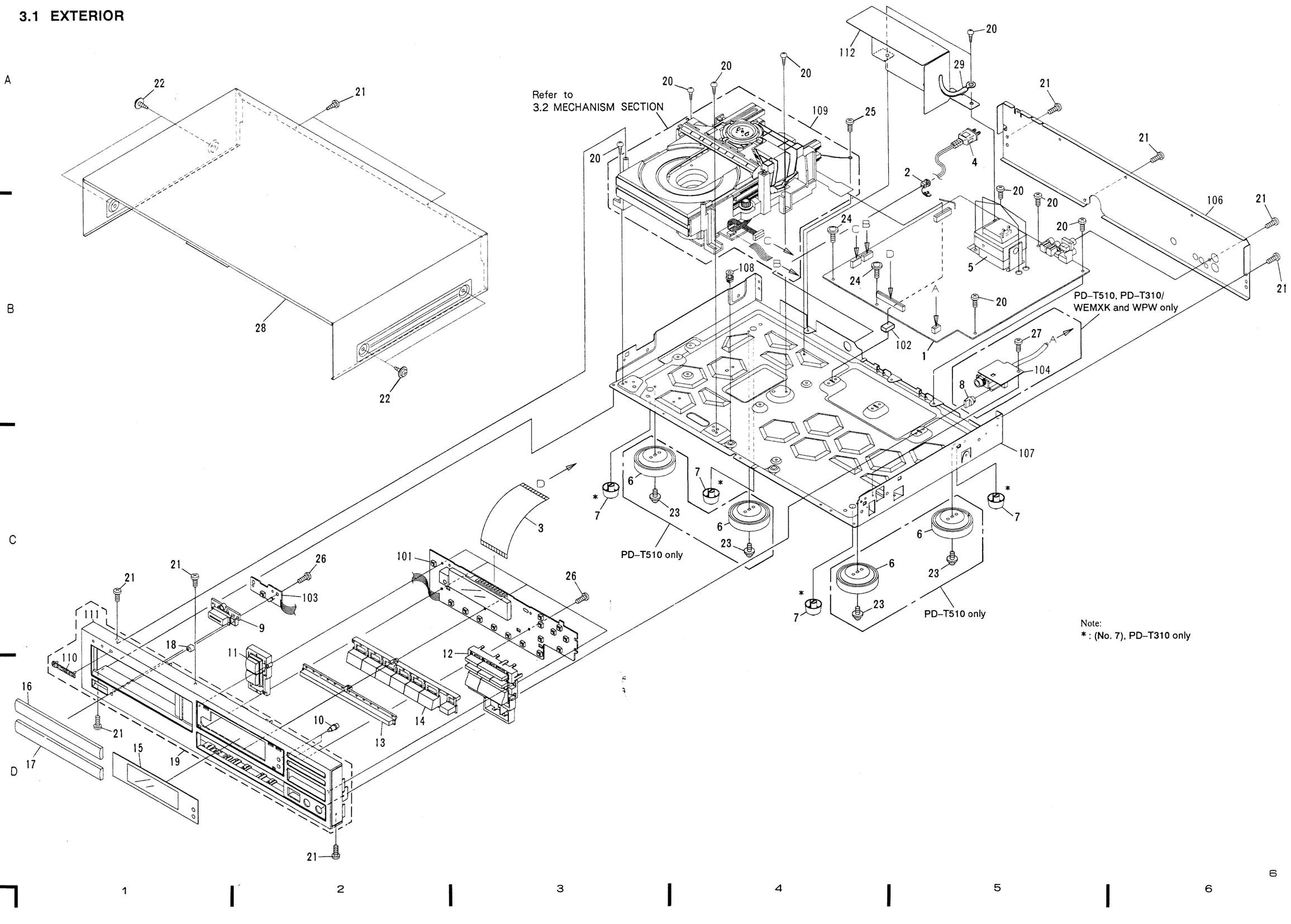


Fig. 8

3. EXPLODED VIEWS AND PARTS LIST

3.1 EXTERIOR



NOTES:

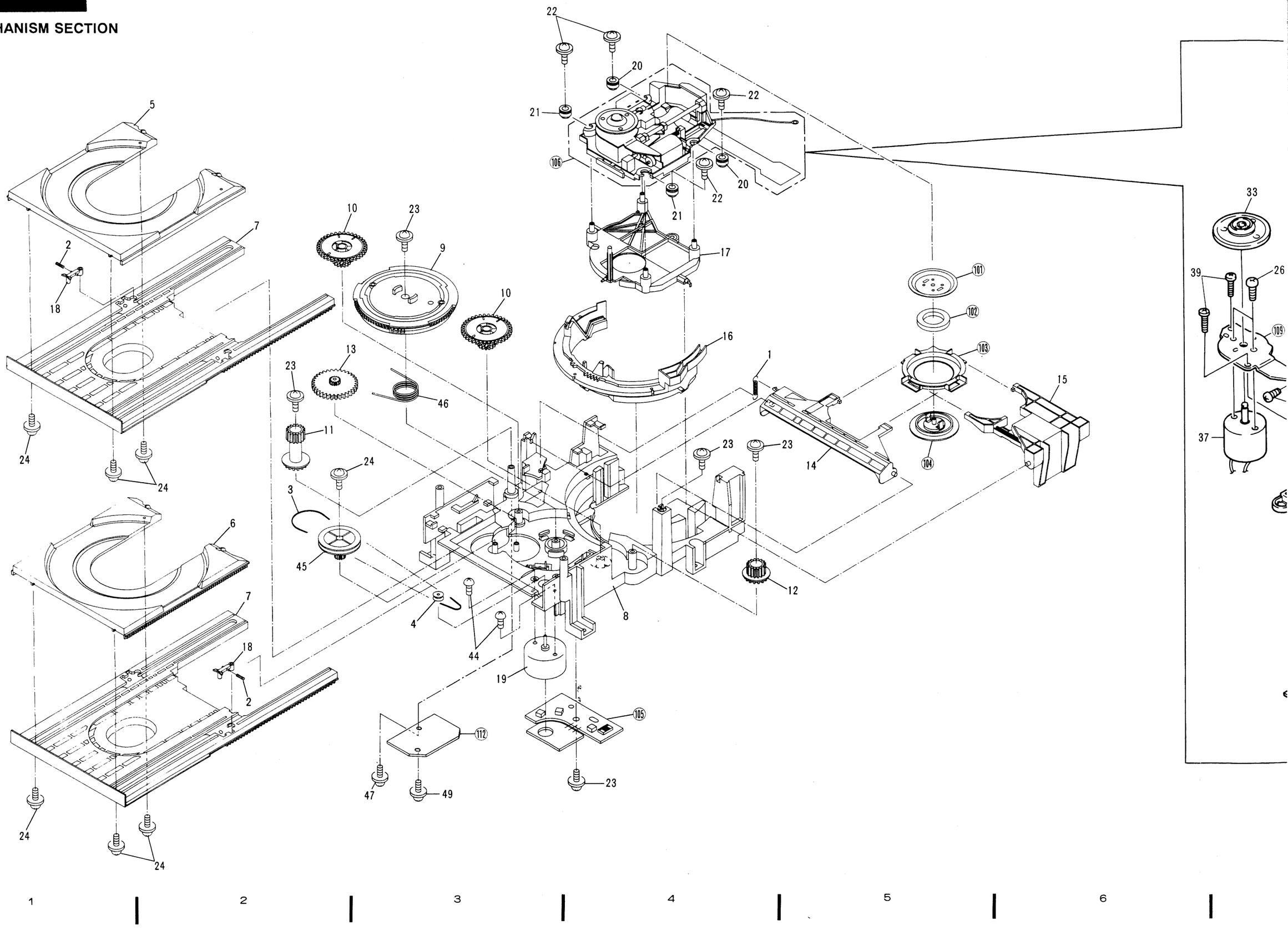
- Parts marked by "NSP" are generally unavailable because they are not in our Master Spare Parts List.
- The ⚠ mark found on some component parts indicates the importance of the safety factor of the part. Therefore, when replacing, be sure to use parts of identical designation.
- Parts marked by "⊙" are not always kept in stock. Their delivery time may be longer than usual or they may be unavailable.

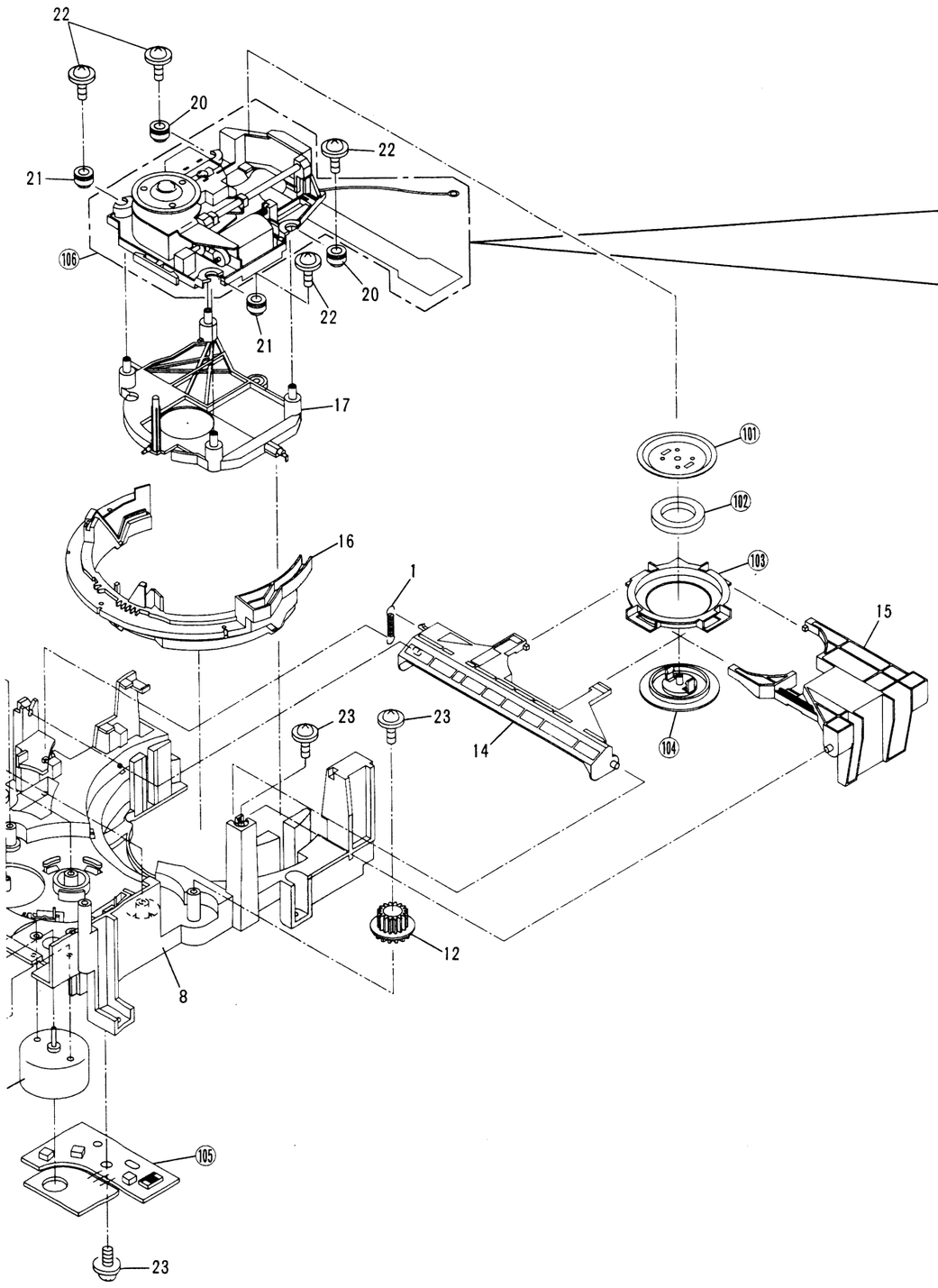
Parts List (For PD–T510/KC and PD–T310/KC)

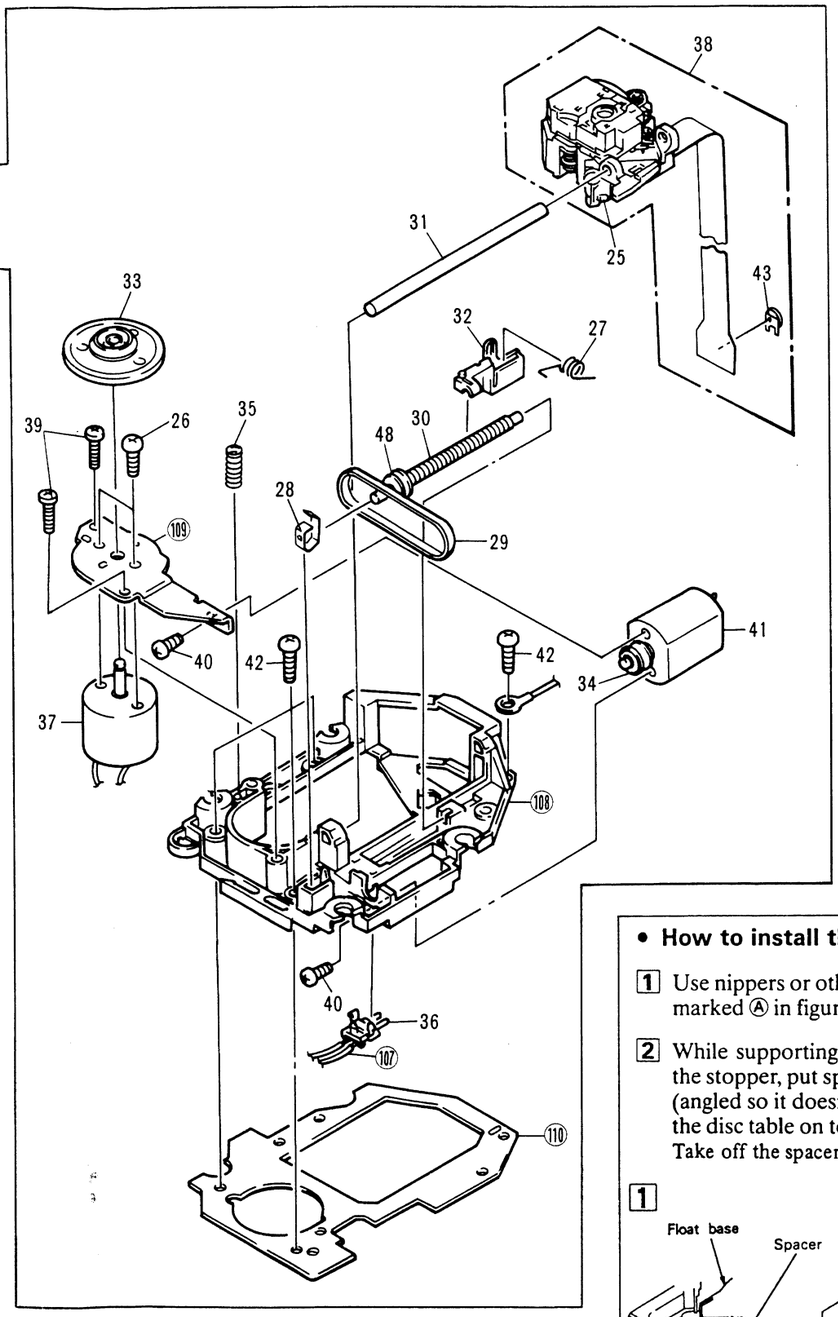
Mark	No.	Description	Part No.
⊙	1	Mother board assembly (For PD – T510)	PWM1668
⊙		Mother board assembly (For PD – T310)	PWM1665
⚠	2	Strain relief	CM – 22
	3	32P F.F.C/30V (For PD – T510)	PDD1041
		30P F.F.C/30V (For PD – T310)	PDD1049
⚠	4	Power cord with plug	PDG1040
⚠	5	Power transformer	PTT1237
	6	Insulator	PNW1912
	7	Foot assembly	PXA1201
	8	Knob (Headphone)	PAC1370
	9	Power button	PAC1540
	10	Time button (B) (For PD – T510)	PAC1549
		Time button (A) (For PD – T310)	PAC1546
	11	O/C button	PAC1548
	12	Play button (A)	PAC1633
	13	Track button (For PD – T510)	PAC1635
		Fix button (For PD – T310)	PAC1639
	14	Program button (B)	PAC1640
	15	Display window (B) (For PD – T510)	PAM1581
		Display window (A) (For PD – T310)	PAM1545
	16	Name plate (A)	PNW1901
	17	Name plate (B)	PNW1902
	18	LED lens	PNW2019
	19	Function panel assembly (For PD – T510)	PEA1193
		Function panel assembly (For PD – T310)	PEA1190
	20	Screw	BBZ30P060FMC
	21	Screw	BBZ30P080FZK
	22	Screw	FBT40P080FZK
	23	Screw	IBZ30P100FCC
	24	Screw	IBZ30P150FCC
	25	Screw	PDZ30P050FMC
	26	Screw	PPZ30P120FMC
	27	Screw	IBZ30P080FCC
	28	Bonnet	PYY1147
	29	Cord clamper	RNH – 184

Mark	No.	Description	Part No.
NSP	101	Function board assembly (For PD – T510)	PWZ2288
NSP		Function board assembly (For PD – T310)	PWZ2287
NSP	102	Multi – spacer	PEB1027
NSP	103	Switch board assembly	PWZ2294
NSP	104	Headphone board assembly	PWZ2298
	105	.....	
NSP	106	Rear base (For PD – T510)	PNA1730
		Rear base (For PD – T310)	PNA1729
NSP	107	Under base	PNA1882
NSP	108	Spacer	PNY – 404
NSP	109	Twin – tray assembly	PXA1344
NSP	110	Name plate	PAM1407
NSP	111	Panel (C) (For PD – T510)	PNW2197
NSP		Panel (A) (For PD – T310)	PNW2196
NSP	112	Shield angle	PNB1409

3.2 MECHANISM SECTION



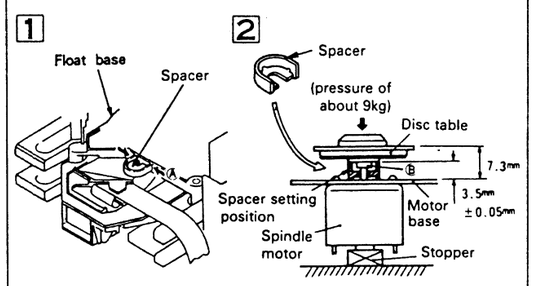




- **How to install the disc table**

1 Use nippers or other tool to cut the two sections marked Ⓐ in figure 1. Then remove the spacer.

2 While supporting the spindle motor shaft with the stopper, put spacer on top of the motor base (angled so it doesn't touch section Ⓑ), and stick the disc table on top (takes about 9kg pressure). Take off the spacer.



Parts List

Mark	No.	Description	Part No.
	1	Clamp spring	PBH1103
	2	Lever spring	PBH1104
	3	Belt	PEB1106
	4	Motor pulley	PNW1634
	5	Tray 1	PNW1839
	6	Tray 2	PNW1840
	7	Sub tray	PNW1841
	8	Loading base	PNW1842
	9	Main cam	PNW1843
	10	Follow gear	PNW1844
	11	Gear 1	PNW1845
	12	Gear 2	PNW1846
	13	Idler gear	PNW1847
	14	Clamper arm U	PNW1850
	15	Clamper arm B	PNW1851
	16	Clamp cam	PNW1852
	17	Float base	PNW2041
	18	Lock lever	PNW1854
	19	Motor (LOADING)	PXM1010
	20	Floating rubber	PEB1014
	21	Floating rubber	PEB1132
	22	Screw	PBA1048
	23	Screw	IPZ30P080FMC
	24	Screw	IPZ20P080FMC
	25	Chip capacitor	CKSYF105Z16
	26	Screw	JFZ20P025FMC
	27	Drive spring	PBH1084
	28	Plate spring	PBK1057
	29	Belt	PEB1072
	30	Drive screw	PLA1003
	31	Guide bar	PLA1071
	32	Half nut	PNW1605
	33	Disc table	PNW1608
	34	Pulley	PNW1634
	35	Earth spring	PBH1009
	36	Push switch (INSIDE)	DSG1014
	37	Spindle motor assembly (with oil)	PEA1028
	38	Pick – up assembly	PEA1030
	39	Screw	BPZ20P080FZK
	40	Screw	PMZ20P030FMC
	41	Motor (CARRIAGE)	PXM1013
	42	Screw	PBZ30P080FMC
	43	Semi – fixed resistor	PCP1008
	44	Screw	PMZ26P040FMC
	45	Gear pulley	PNW1848
	46	Push spring	PBH1105
	47	Screw	IPZ30P200FMC
	48	Pulley	PNW1066
	49	Screw	IBZ30P120FMC

Mark	No.	Description	Part No.
NSP	101	Yoke	PNB1216
NSP	102	Magnet	PMF1014
NSP	103	Clamper holder	PNW1849
NSP	104	Clamper S	PNW1609
NSP	105	Mechanism P.C.B assembly	PWX1162
NSP	106	Servo mechanism assembly T	PXA1349
NSP	107	Connector assembly (6P)	PDE1089
NSP	108	Mechanism chassis	PNW1604
NSP	109	Motor base	PNB1211
NSP	110	Mechanism base	PNB1230
	111	.....	
NSP	112	Sub plate	PNB1287

4. PACKING AND PARTS LIST

NOTES:

- Parts marked by "NSP" are generally unavailable because they are not in our Master Spare Parts List.
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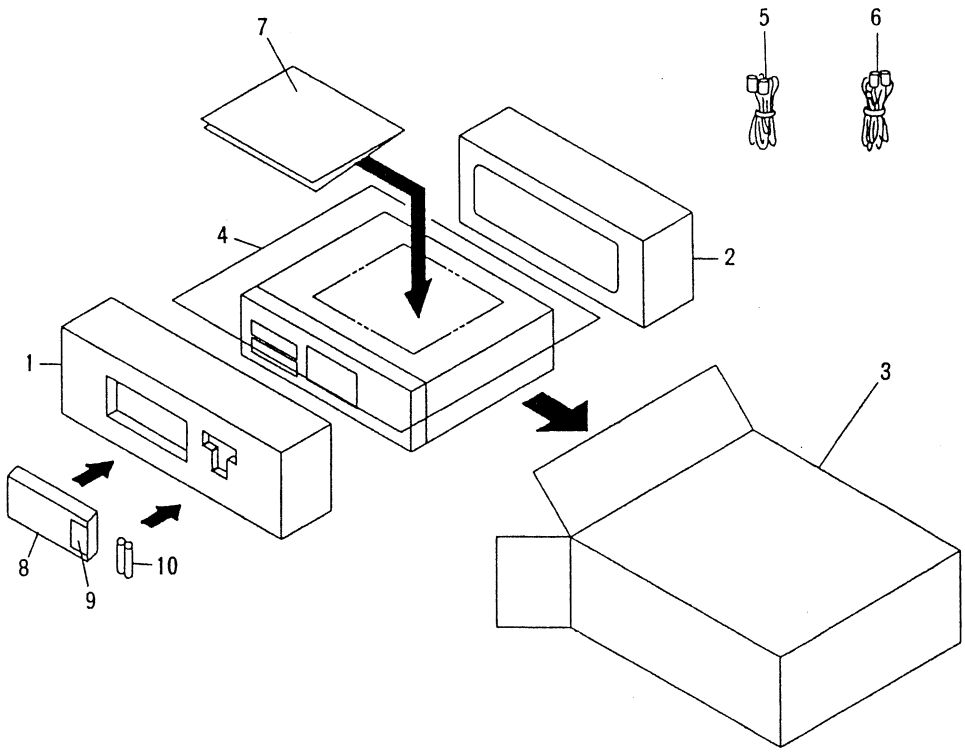
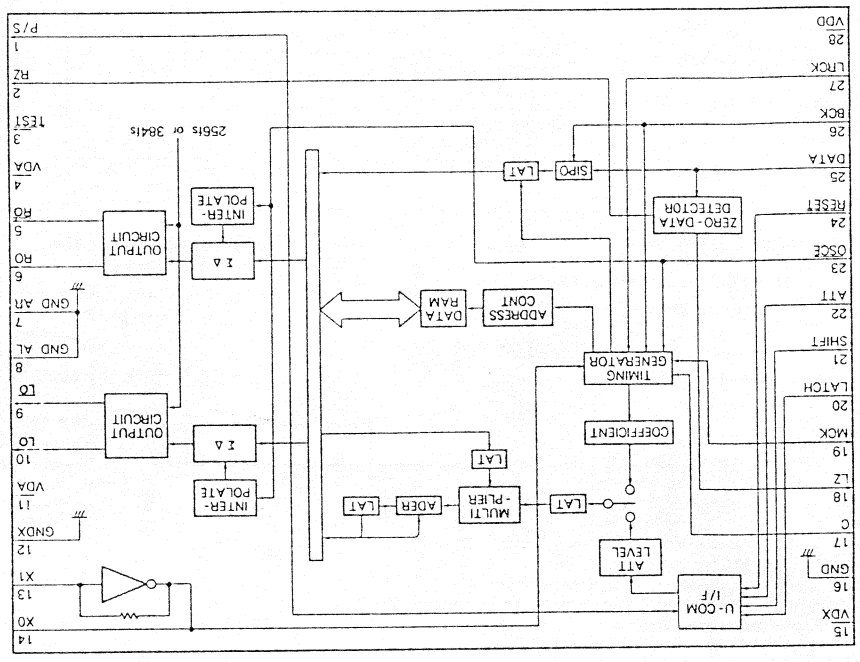
- Parts marked by "⊙" are not always kept in stock. Their delivery time may be longer than usual or they may be unavailable.

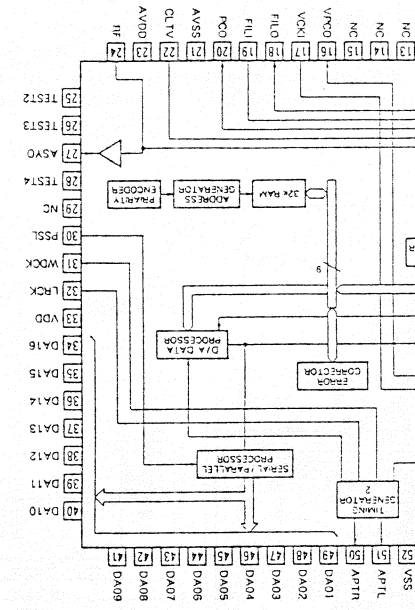
Parts List (For PD–T510/KC and PD–T310/KC)

Mark	No.	Description	Part No.
	1	Protector (F)	PHA1116
	2	Protector (R)	PHA1117
	3	Packing case (For PD – T510)	PHG1750
		Packing case (For PD – T310)	PHG1749
	4	Sheet	Z23 – 007
	5	Connection cord (with mini plug)	PDE – 319
	6	Connection cord	PDE1109
	7	Operating instructions (English/French)	PRE1153
	8	Remote control unit (CU – PD047) (For PD – T510)	PWW1062
	9	Battery cover (For PD – T510)	PZN1010
NSP	10	Battery (R03, AAA) (For PD – T510)	VEM – 022





IC401: PD2026A



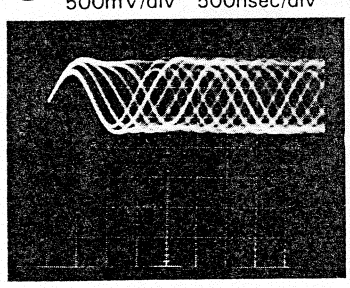
5. SCHEMATIC DIAGRAM

Wave Forms

Note: The encircled numbers denote measuring points in the schematic diagram.

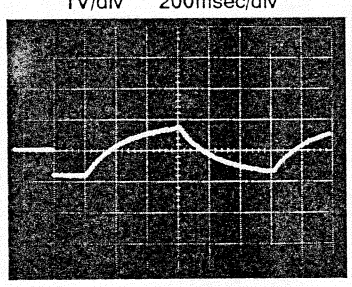
*1 50T-JUMP: After switching to the pause mode, press the manual search key.
*2 FOCUS-IN: Press the key without loading a disc.
*3 POWER ON : Plug AC cord into AC wall socket.
*4 POWER OFF: Unplug AC cord from AC wall socket.

② TP1-Pin 1: PLAY MODE
(RF)
500mV/div 500nsec/div



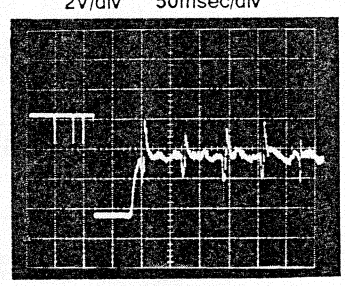
— GND

⑤ IC202-Pin 1: FOCUS-IN (* 2) MODE
(FODR)
1V/div 200msec/div



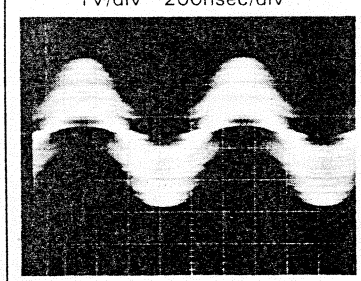
— GND

⑦ IC201-Pin 3: TRACK SEARCH MODE
(SPDR)
2V/div 50msec/div



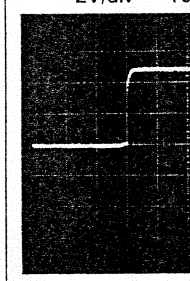
— GND

⑪ IC401-pin 10: PLAY MODE (1kHz)
(LO)
1V/div 200nsec/div

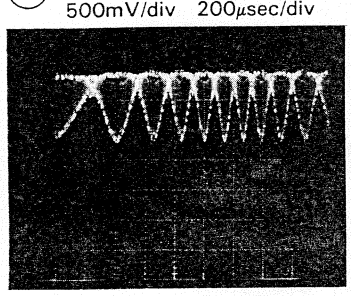


— GND

⑫ IC20-Pin 9:
(RST)
2V/div 10

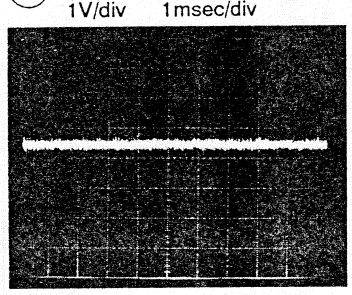


② TP1-Pin 1: TRACK SEARCH MODE
(RF)
500mV/div 200μsec/div



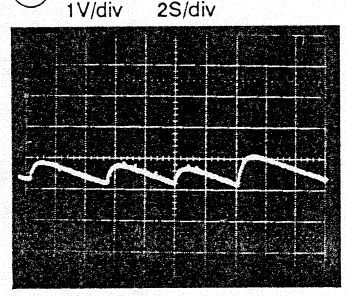
— GND

⑤ IC202-Pin 1: PLAY MODE
(FODR)
1V/div 1msec/div



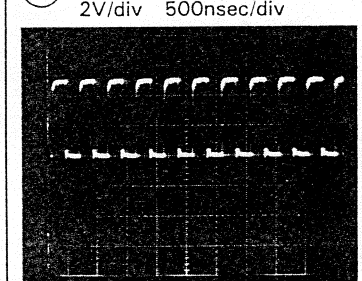
— GND

⑧ IC201-Pin 4: PLAY MODE
(CADR)
1V/div 2S/div



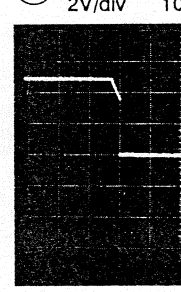
— GND

⑯ IC301-Pin 35: PLAY MODE (1kHz)
(BCLK)
2V/div 500nsec/div

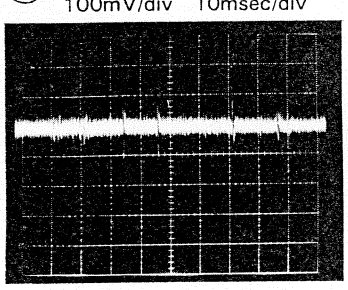


— GND

⑫ IC20-Pin 9:
(RST)
2V/div 10

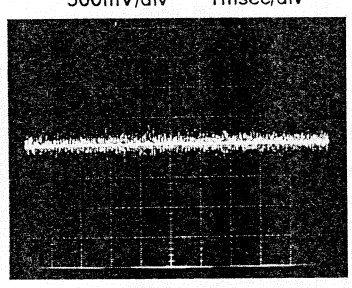


③ TP1-Pin 6: PLAY MODE
(FOER)
100mV/div 10msec/div



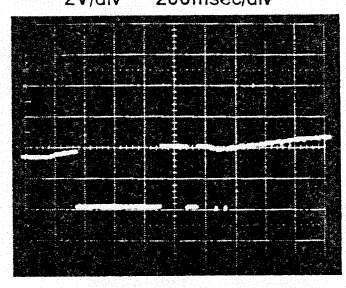
— GND

⑥ IC202-Pin 3: PLAY MODE
(TRDR)
500mV/div 1msec/div



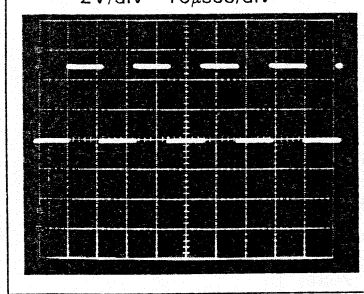
— GND

⑧ IC201-Pin 4: TRACK SEARCH MODE
(CADR)
2V/div 200msec/div



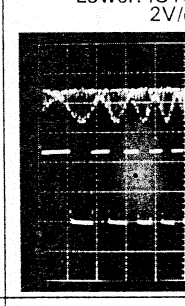
— GND

⑱ IC301-Pin 32: PLAY MODE (1kHz)
(LRCK)
2V/div 10μsec/div

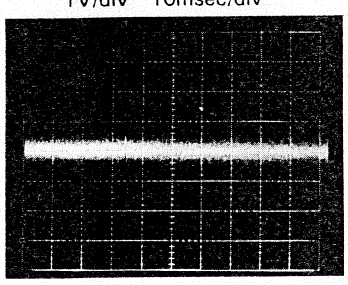


— GND

⑫ Upper: TP1
Lower: IC1
2V/

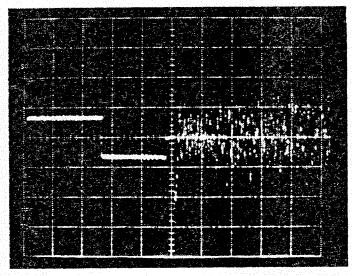


④ TP1-Pin 2: PLAY MODE
(TRER)
1V/div 10msec/div



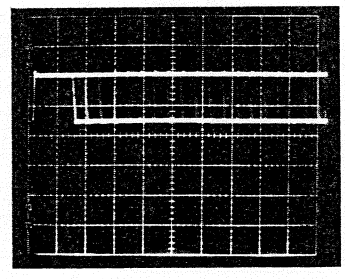
— GND

⑥ IC202-Pin 3: 50T-JUMP (* 1) MODE
(TRDR)
500mV/div 1msec/div



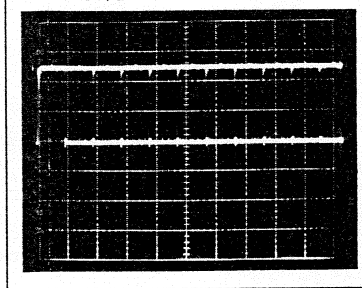
— GND

⑨ IC151-Pin 38: PLAY MODE
(EFM)
2V/div 500nsec/div



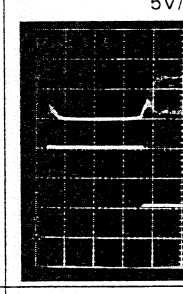
— GND

⑲ IC301-Pin 34: PLAY MODE (1kHz)
(DATA)
2V/div 500nsec/div

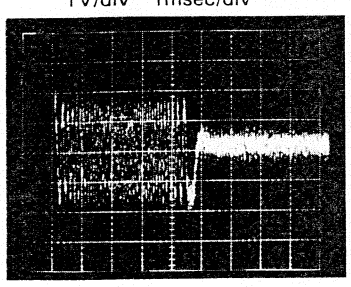


— GND

⑫ Upper: TP1
Lower: IC1
5V/

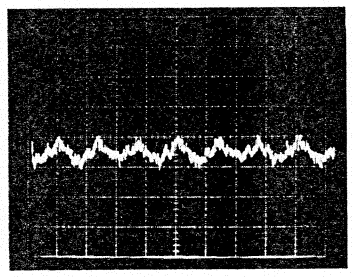


④ TP1-Pin 2: 50T-JUMP (*1) MODE
(TRER)
1V/div 1msec/div



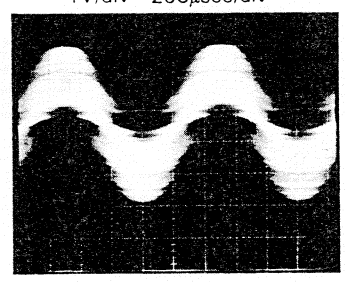
— GND

⑦ IC201-Pin 3: PLAY MODE
(SPDR)
1V/div 50msec/div



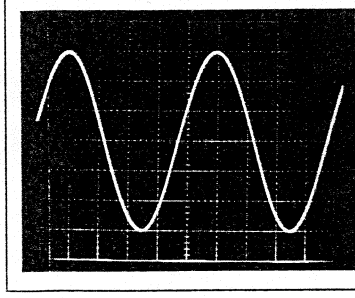
— GND

⑩ IC401-Pin 9: PLAY MODE (1kHz)
(LO) (D/A DATA OUT)
1V/div 200μsec/div



— GND

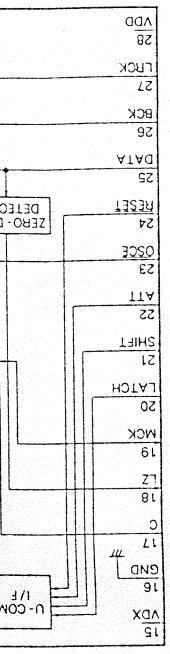
㉑ Pin -OUTPUT: PLAY MODE (1kHz)
1V/div 200μsec/div



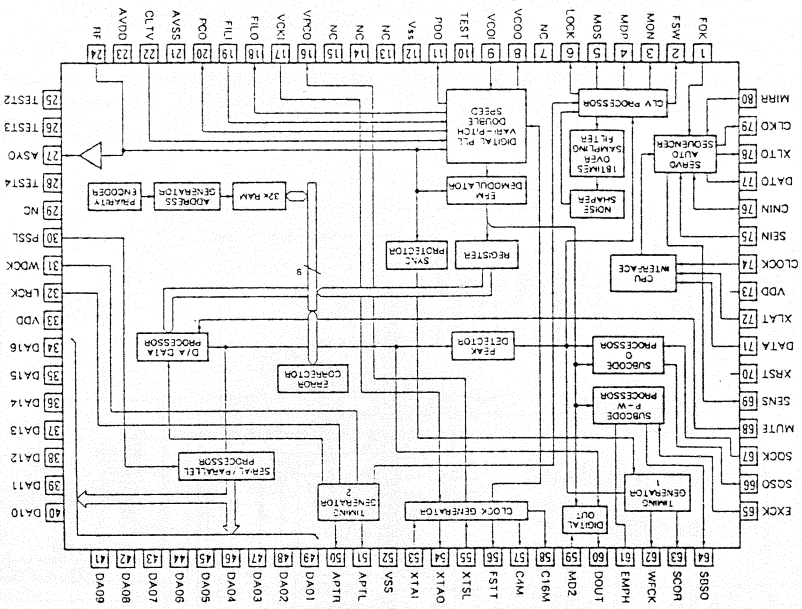
— GND

㉕

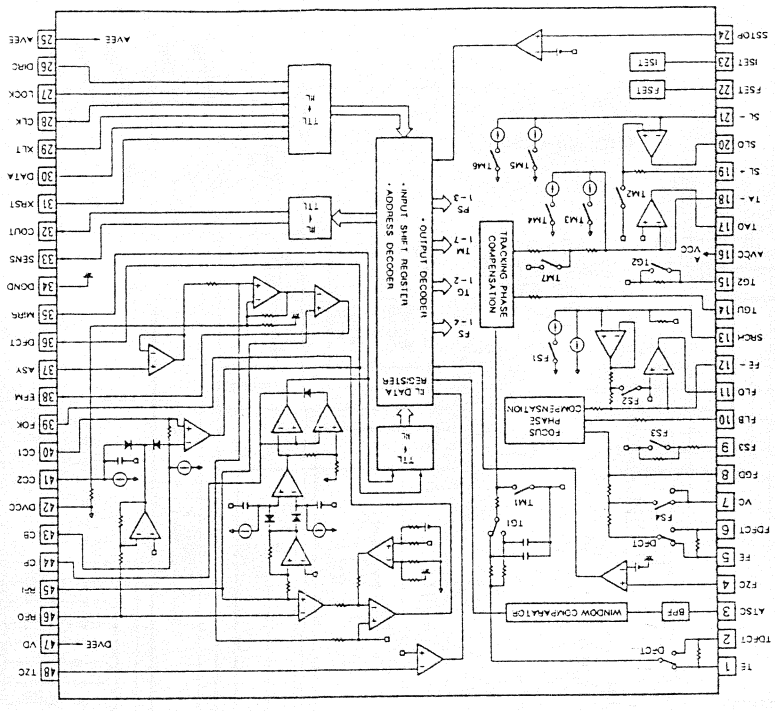
IC401: PD2026A



IC301: CXD2500AQ

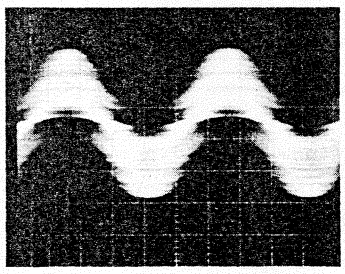


IC151: CXA1372S

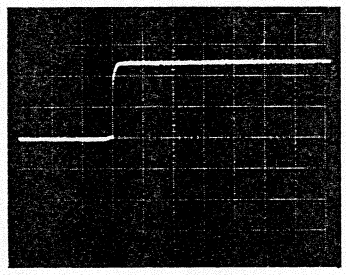


*3 POWER ON : Plug AC cord into AC wall socket.
*4 POWER OFF: Unplug AC cord from AC wall socket.

(11) IC401-pin 10: PLAY MODE (1kHz) (LO)
1V/div 200nsec/div

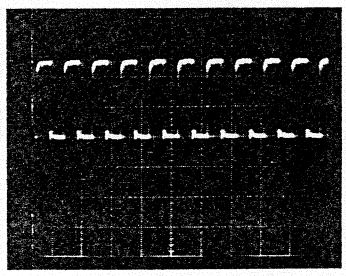


(22) IC20-Pin 9: POWER ON (* 3) (RST)
2V/div 100msec/div

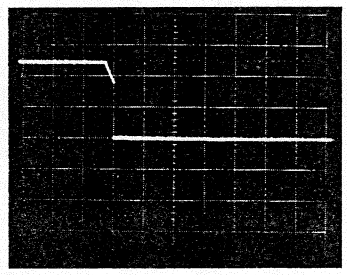


(26)

(16) IC301-Pin 35: PLAY MODE (1kHz) (BCLK)
2V/div 500nsec/div

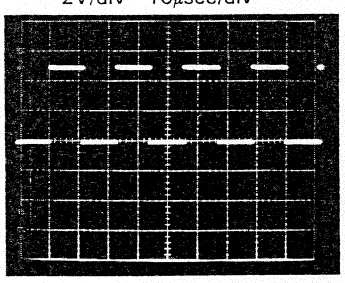


(22) IC20-Pin 9: POWER OFF (* 4) (RST)
2V/div 100msec/div

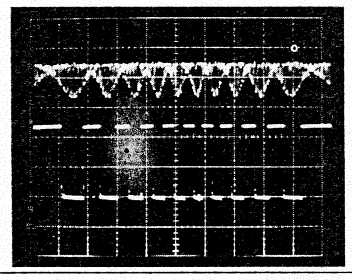


(27)

(18) IC301-Pin 32: PLAY MODE (1kHz) (LRCK)
2V/div 10μsec/div

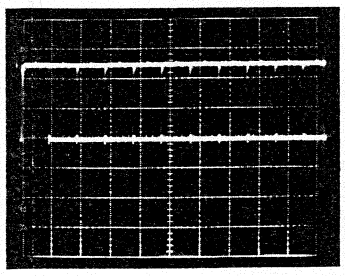


(23) : TRACK SEARCH MODE
Upper: TP1-Pin 1 (RF) 1V/div
Lower: IC151-Pin 35 (MIRR)
2V/div 200μsec/div

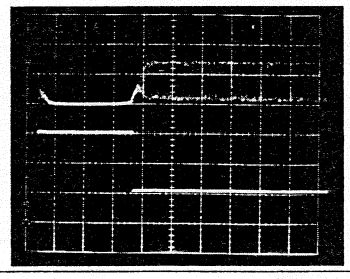


(28)

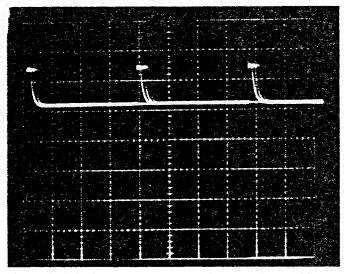
(19) IC301-Pin 34: PLAY MODE (1kHz) (DATA)
2V/div 500nsec/div



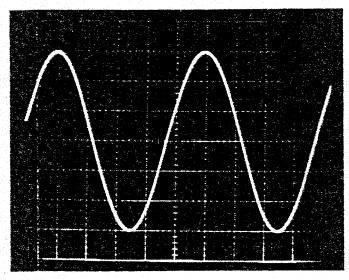
(24) : PLAY MODE
Upper: TP1-Pin 1 (RF) 1V/div
Lower: IC151-Pin 36 (DFCT)
5V/div 200μsec/div



(33) IC301-Pin 4: PLAY MODE (MDP)
2V/div 2μsec/div

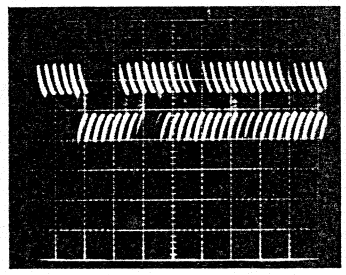


(21) Pin -OUTPUT: PLAY MODE (1kHz)
1V/div 200μsec/div

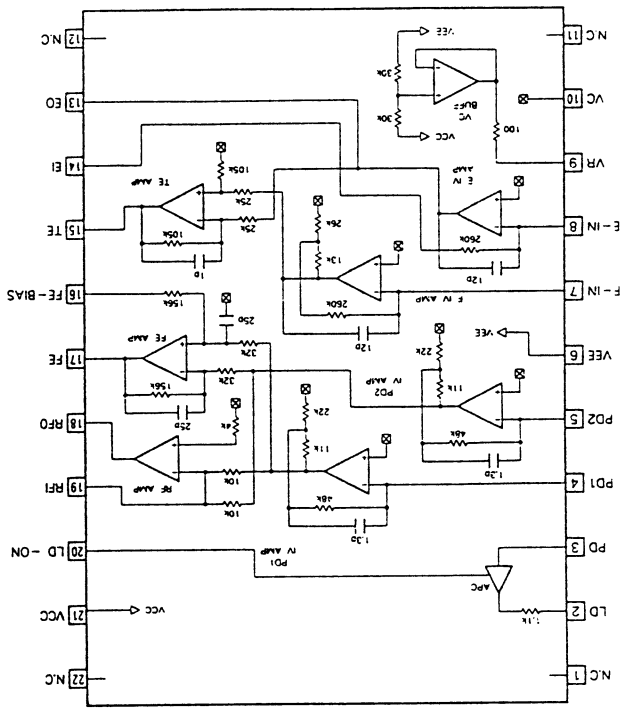


(25)

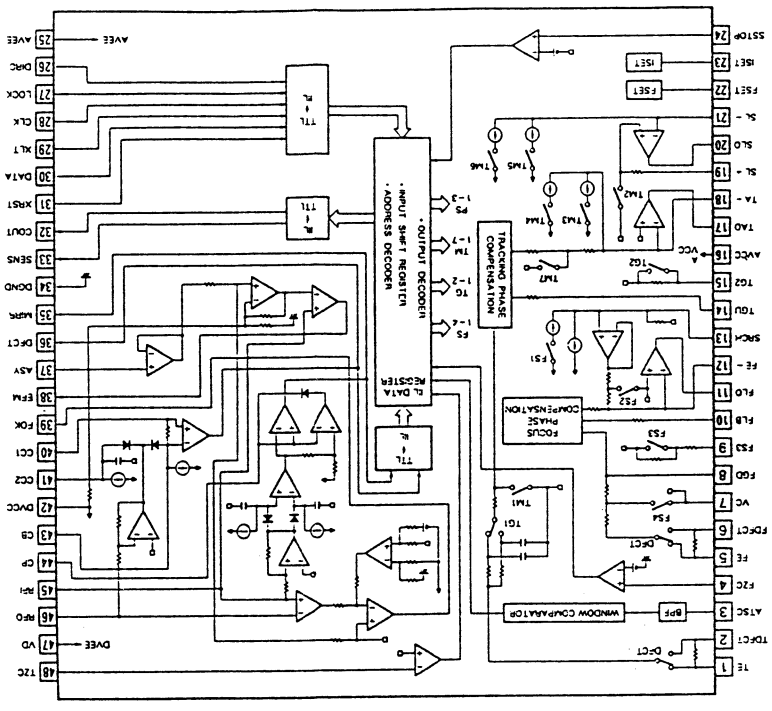
(53) IC301-Pin 20: PLAY MODE (PCO)
2V/div 10μsec/div



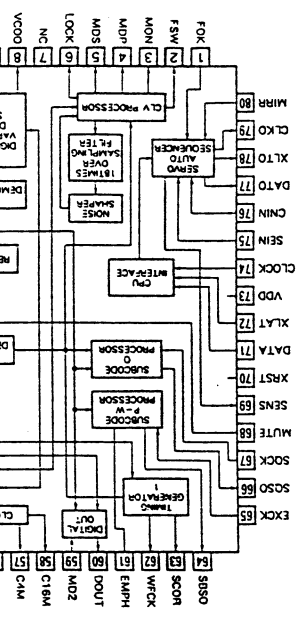
● IC BLOCK DIAGRAMS



IC101:CXA1471S



IC151:CXA1372S



IC301:CXD2500AQ

N (*3) — GND	(26)
FF (*4) — GND	(27)
EARCH MODE 1V/div MIRR) ec/div — GND — GND	(28)
DE 1V/div (DFCT) sec/div — GND — GND	(33) IC301-Pin 4: PLAY MODE (MDP) 2V/div 2μsec/div — GND
	(53) IC301-Pin 20: PLAY MODE (PCO) 2V/div 10μsec/div — GND

NOTE

RESISTORS

1/6W Type:

Rating ifentified where used

CAPACITORS

(1) M:Mylar CQMA or Film (PCL1030, 1032)

(2) YB:Ceramic CKCYB

(3) CH:Ceramic CCCCH

(4) YX:Ceramic CGCYX

(5) SL:Ceramic CCCSL

(6) Unmarked type CKCYF

INDUCTORS

(1) AX:Axial tipe LAU

(2) Unmarked type Radial type LFA

OTHERS

⏚:CHASSIS GROUND

$\overline{ABC}$:LOW ACTIVE SIGNAL

MOTHER BOARD ASSEMBLY

PWM1665 : PD-T310/KC, WPW
PWM1666 : PD-T310/WEMXK
PWM1667 : PD-T310/RD
PWM1668 : PD-T510/KC, WPW
PWM1669 : PD-T510/WEMXK
PWM1670 : PD-T510/RD

*1

	R445, R446	R447, R448
PD-T310/WEMXK PD-T510*	270Ω	470Ω
PD-T310 /KC, RD, WPW	680Ω	SHORT (JUMPER)

*2

PD-T310*
PD-T510*

IC301
CXD2500AQ
DECODER

IC401
PD2026A
DAC

IC351
PD4395A
SYSTEM CONTROL

IC151
CXA1372S
(SERVO CONTROL)
SERVO CONTROL

IC405 (1/2)(2/2):
LOW-PASS FILTER

IC406 (1/2)
BA15218

IC406 (2/2)
BA15218

HEADPHONE AMP

Q322: INVERTER BUFFER

Q451: ZERO DETECTING ATTENUATOR DRIVER

Q452: ZERO DETECTING ATTENUATOR DRIVER

Q453: 2SB1296

Q454: ZERO DETECTING ATTENUATOR

Q405: MUTE DRIVE

Q391: INVERTER BUFFER

IC21: +5V REGULATOR

IC20: SYSTEM RESET, ±5V REGULATOR

IC31: PROTECTOR

PD-T310*, PD-T510/KC, WPW ONLY.

PD-T510/RD, WEMXK ONLY

PD-T510/KC, WPW ONLY

WEMXK ONLY

KC, WEMXK, WPW Types

AC POWER CORD
KC Type : PDG1015
WPW Type : PDG1006
WEMXK Type : PDG1003

POWER TRANSFORMER
PTT1237: KC Type.
PTT1236: WEMXK Type.

REMOTE SENSOR
SBX1610-51
PD-T510*ONLY

PEL1066
FLUORESCENT DISPLAY

FUNCTION BOARD ASSEMBLY

NOTE.

PD-T310* : PD-T310/KC, WPW, WEMXK, and RD.
PD-T510* : PD-T510/KC, WPW, WEMXK, and RD.
KC Type : PD-T310/KC and PD-T510/KC
WPW Type : PD-T310/WPW and PD-T510/WPW.
WEMXK Type : PD-T310/WEMXK and PD-T510/WEMXK.
RD Type : PD-T310/RD and PD-T510/RD.

(F) Signal Rout
(T) Focus Servo Loop
(T) Tracking Servo Loop
(C) Carriage Servo Loop
Measurement Point

ER BOARD ASSEMBLY

6 : PD-T310/KC. WPW　　PWM1668 : PD-T510/KC,WPW
6 : PD-T310/WEMXK　　PWM1669 : PD-T510/WEMXK
7 : PD-T310/RD　　PWM1670 : PD-T510/RD

*1

	R445, R446	R447, R448
PD-T310/WEMXK PD-T510*	270Ω	470Ω
PD-T310 /KC, RD, WPW	680Ω	SHORT (JUMPER)

*2

	C433, C434	IC405
PD-T310*	CEAS220M25	NJM4558D-D
PD-T510*	PCH1107 (22/25)	NJM4565D-D

Q452: ZERO DETECTING ATTENUATOR DRIVER

Q454: ZERO DETECTING ATTENUATOR

Q403, Q404: MUTE

JA401 (1/2) PKB1009 LINEOUT JACK

JA401 (2/2) PKB1009

IC405 (1/2)(2/2): LOW-PASS FILTER

Q453: ZERO DETECTING ATTENUATOR

Q453: 2SB1296

Q451: ZERO DETECTING ATTENUATOR DRIVER

Q405: MUTE DRIVE

DAC

IC401 PD2026A

IC351 PD4395A SYSTEM CONTROL

PD-T310/WEMXK, PD-T510* ONLY

HEADPHONE AMP

IC406 (1/2) BA15218

IC406 (2/2) BA15218

HEADPHONE BOARD ASSEMBLY

Q391: INVERTER BUFFER

PD-T310*, PD-T510/KC, WPW ONLY.

PD-T510/RD, WEMXK ONLY

PD-T510/KC, WPW ONLY

WEMXK ONLY

IC21: +5V REGULATOR

IC20: SYSTEM RESET, +5V REGULATOR

IC31: PROTECTOR

*3

	PD-T310*	PD-T510*
CN351	HLEM30S-1	HLEM32S-1
CN701	HLEM30R-1	HLEM32R-1
J701	PDD1049	PDD1041

*4

	KC, WPW Types	WEMXK, RD Types
IC20	TA2019P	M5298P

KC, WEMXK, WPW Types

⚠AC POWER CORD
KC Type : PDG1015
WPW Type : PDG1006
WEMXK Type : PDG1003

RD Type

AC POWER CORD ⚠PDG1013

POWER TRANSFORMER
⚠PTT1237: KC Type.
⚠PTT1236: WEMXK Type.

POWER TRANSFORMER ⚠PTT1238

⚠PSB1006

S5

220-240V

110-127V

LINE VOLTAGE SELECTOR

0V

RKC-061

NOTE.

PD-T310* : PD-T310/KC, WPW, WEMXK, and RD.
PD-T510* : PD-T510/KC, WPW, WEMXK, and RD.
KC Type : PD-T310/KC and PD-T510/KC.
WPW Type : PD-T310/WPW and PD-T510/WPW.
WEMXK Type : PD-T310/WEMXK and PD-T510/WEMXK.
RD Type : PD-T310/RD and PD-T510/RD.

Signal Rout
(F) Focus Servo Loop
(T) Tracking Servo Loop
(C) Carriage Servo Loop
Measurement Point

6　7　8　9

1. RESISTORS :
   Indicated in Ω, 1/4W, 1/6W, 1/8W, ±5% tolerance unless otherwise noted k ; kΩ, M ; MΩ, (F) ; ±1%, (G) ; ±2%, (K) ; ±10%,(M) ; ±20% tolerance.

2. CAPACITORS :
   Indicated in capacity (μF) /voltage (V) unless otherwise noted p ; pF. Indication without voltage is 50V except electrolytic capacitor.

3. VOLTAGE CURRENT :
   ⌜ ⌝ ; DC voltage (V) in play mode.
   ←mA ; DC current in play mode.
   ; Value in ( ) is DC current in stop mode.

4. OTHERS :
   ➡ ; Signal route.
   ⊘ ; Adjusting point
   The ⚠ mark found on some component parts indicates the importance of the safety factor of the part. Therefore, when replacing, be sure to use parts of identical designation.
   ※ marked capacitors and resistors have parts numbers.

   This is the basic schematic diagram, but the actual circuit may vary due to improvements in design.

5. SWITCHES (The underlined indicates the switch position)

FUNCTION BOARD ASSEMBLY
S701 : OPEN/CLOSE I
S702 : STOP
S703 : PAUSE
S704 : PLAY
S705 : RANDOM
S706 : PEAK SEARCH
S707 : HI-LITE SCAN
S708 : DISC II SELECT
S709 : PROGRAM
S710 : CLEAR
S711 : EDIT
S712 : REPEAT
S713 : DISC I SELECT
S714 : 5 (PD-T510 ONLY)
S715 : 10 (PD-T510 ONLY)
S716 : 1 (PD-T510 ONLY)
S717 : 2 (PD-T510 ONLY)
S718 : 3 (PD-T510 ONLY)
S719 : 4 (PD-T510 ONLY)
S720 : 6 (PD-T510 ONLY)
S721 : 7 (PD-T510 ONLY)
S722 : 8 (PD-T510 ONLY)
S723 : 9 (PD-T510 ONLY)
S724 : TRACK/MANUAL SEARCH REV
S725 : TRACK/MANUAL SEARCH FWD
S726 : >10 (PD-T510 ONLY)
S727 : OPEN/CLOSE II
S728 : AUTO EJECT
S729 : TIME

SWITCH BOARD ASSEMBLY
S801 : POWER

MECHANISM BOARD ASSEMBLY
S601 : TRY1
S602 : TSEL
S603 : TRY2

SERVO MECHANISM ASSEMBLY T
: INSIDE

IC351 (PD4395A)

Pin No.	Volts	Pin No.	Volts	Pin No.	Volts	Pin No.	Volts
1	5.0	17	-3.0~-22.0	33	5.0	49	0
2	-22.0	18	-26.0	34	3.5~4.7	50	5.0
3	-22.0	19	-5.0	35	5.0	51	0
4	-22.0	20	-3.0~-22.0	36	0	52	5.0
5	-22.0	21	-3.0~-22.0	37	5.0	53	5.0
6	-22.0	22	-3.0~-22.0	38	5.0	54	5.0
7	-22.0	23	-3.0~-22.0	39	0	55	0
8	-22.0	24	-3.0~-22.0	40	0	56	2.5
9	-22.0	25	-3.0~-22.0	41	0	57	2.5
10	-22.0	26	5.0	42	0	58	0
11	-25.0	27	-3.0~-22.0	43	0	59	0
12	5.0	28	-3.0~-22.0	44	0	60	5.0
13	5.0	29	-3.0~-22.0	45	5.0	61	0
14	0	30	-3.0~-22.0	46	5.0	62	0
15	0	31	5.0	47	0	63	0
16	-3.0~-22.0	32	5.0	48	0	64	0

IC301 (CXD2500AQ)

Pin No.	Volts	Pin No.	Volts	Pin No.	Volts	Pin No.	Volts
1	5.0	21	0	41	2.5	61	0
2	2.1	22	2.5	42	5.0	62	2.5
3	5.0	23	5.0	43	2.5	63	0
4	2.6	24	2.5	44	0	64	0
5	2.2	25	0.2	45	5.0	65	0
6	5.0	26	0	46	4.4	66	3.3~4.6
7	0	27	2.5	47	0	67	5.0
8	5.0	28	0	48	0	68	0
9	0	29	0	49	0~0.3	69	2.1~3.0
10	0	30	0	50	1.2	70	5.0
11	2.1	31	1.3~2.2	51	1..2	71	5.0
12	0	32	2.5	52	0	72	5.0
13	1.0	33	5.0	53	2.5	73	5.0
14	0.9~1.3	34	2.5	54	2.5	74	5.0
15	0	35	2.5	55	0	75	5.0
16	2.0	36	2.5	56	2.9	76	0
17	0	37	2.5	57	2.5	77	5.0
18	2.5	38	2.5	58	2.5	78	5.0
19	2.4	39	0	59	0	79	5.0
20	2.4	40	5.0	60	0	80	0

IC151 (CXA1372S)

Pin No.	Volts	Pin No.	Volts
1	0	25	−5.0
2	0	26	5.0
3	0	27	5.0
4	0	28	5.0
5	0	29	5.0
6	0	30	5.0
7	0	31	5.0
8	0	32	0
9	0	33	5.0
10	0	34	0
11	0.4	35	0
12	0	36	−5.0
13	0.2	37	2.5
14	0	38	2.5
15	0	39	5.0
16	5.0	40	−1.5
17	0	41	−1.7
18	0	42	5.0
19	0	43	−0.7
20	0 ～ 0.3	44	−1.6
21	0	45	0
22	−4.0	46	0.8
23	1.3	47	−5.0
24	0	48	0

IC101 (CXA1471S)

Pin No.	Volts
1	0
2	2.9
3	−4.7
4	0
5	0
6	−5.0
7	0
8	0
9	0
10	0
11	0
12	0
13	−0.9
14	−0.7
15	0
16	0
17	0
18	0.8
19	0
20	5.0
21	5.0
22	0

IC20 (TA2019P)

Pin No.	Volts
1	−9.5
2	0
3	−5.0
4	0
5	−9.5
6	−7.5
7	3.3
8	1.1
9	5.0
10	1.1
11	0.6
12	5.0
13	8.3
14	5.0
15	1.2
16	8.3

IC401 (PD2026A)

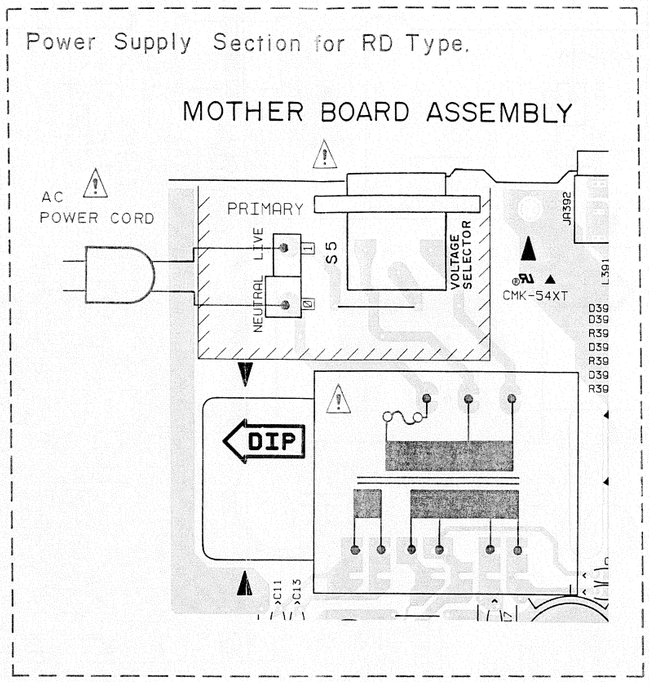
Pin No.	Volts	Pin No.	Volts
1	0	15	5.0
2	0	16	0
3	5.0	17	5.0
4	5.0	18	0
5	2.4	19	2.0
6	2.6	20	5.0
7	0	21	5.0
8	0	22	5.0
9	2.6	23	5.0
10	2.4	24	5.0
11	5.0	25	2.4
12	0	26	2.4
13	2.4	27	2.4
14	2.4	28	5.0

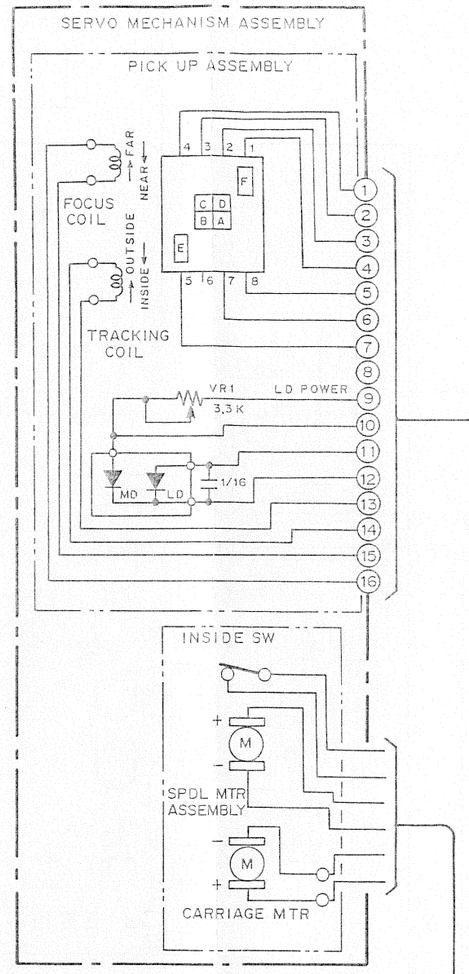
6. PCB CONNECTIONS DIAGRAM

- View from component side

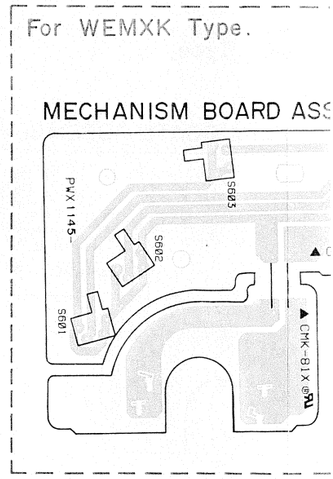
P.C.B. pattern diagram indication	Corresponding part symbol	Part name	P.C.B. pattern diagram indication	Corresponding part symbol	Part name
		Transistor			Ceramic capacitor
		FET			Mylar capacitor
		Diode			Styrol capacitor
					Electrolytic capacitor (Non polarized)
					Electrolytic capacitor (Noiseless)
		Zenner diode			Electrolytic capacitor (Polarized)
					Electrolytic capacitor (Polarized)
		LED			Power capacitor
		Varactor			Semi-fixed resistor
		Tact switch			Resistor array
		Inductor			Resistor
		Coil			Resonator
		Transformer			Thermistor
		Filter			

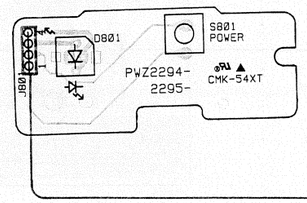
1. This P.C.B. connection diagram is viewed from the parts mounted side.
2. The parts which have been mounted on the board can be replaced with those shown with the corresponding wiring symbols listed in the above Table.
3. The capacitor terminal marked with ▭ shows negative terminal.
4. The diode marked with ○ shows cathode side.
5. The transistor terminal marked with ▭ shows emitter.

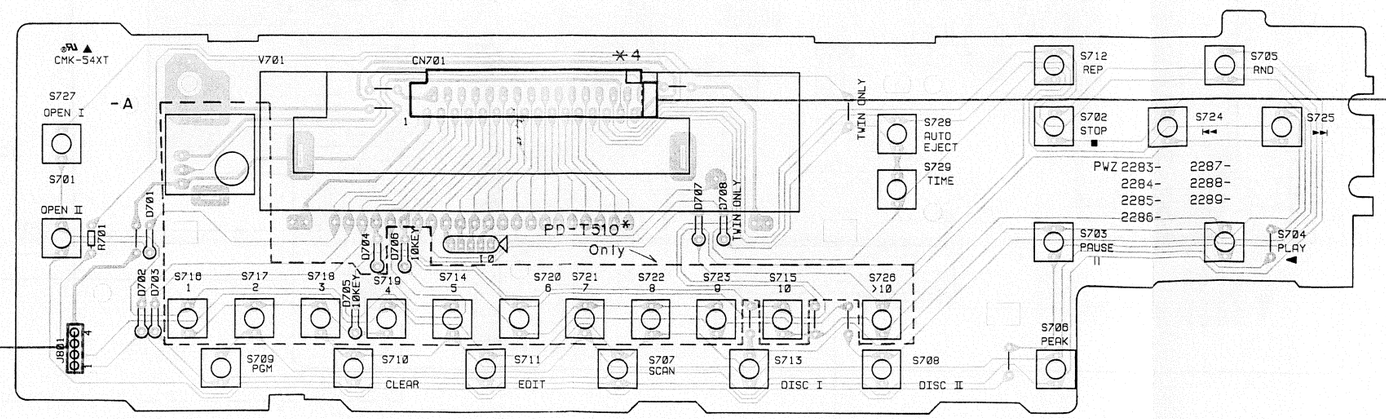


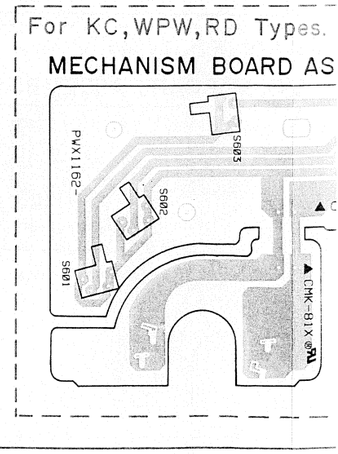


MOTHER BOARD AS
(PWM1665: PD-T31C
(PWM1666: PD-T31C
(PWM1667: PD-T31C
(PWM1668: PD-T51C
(PWM1669: PD-T51C,
(PWM1670: PD-T51C









'HER BOARD ASSEMBLY
M1665:PD-T310/KC,WPW)
M1666:PD-T310/WEMXK)
M1667;PD-T310/RD)
M1668:PD-T510/KC,WPW)
M1669:PD-T510/WEMXK)
'M1670:PD-T510/RD)

NOTE:

PD-T310* : PD-T310/KC, WPW, WEMXK, and RD.
PD-T510* : PD-T510/KC, WPW, WEMXK, and RD.
KC Type : PD-T310/KC and PD-T510/KC.
WPW Type : PD-T310/WPW and PD-T510/WPW.
WEMXK Type : PD-T310/WEMXK and PD-T510/WEMXK.
RD Type : PD-T310/RD and PD-T510/RD.

MXK Type.

ANISM BOARD ASSEMBLY

,WPW,RD Types.

ANISM BOARD ASSEMBLY

Power Supply Section for KC,WEMXK and WPW Types.

AC POWER CORD

PRIMARY

LIVE

NEUTRAL

CMK-54XT

PD-T310*, PD-T510/KC,WPW Only

PD-T310/WEMXK, PD-T510* Only.

DIP

PD-T310*, PD-T510/KC,WPW Only

Q391
Q405
Q404
IC406
Q403
Q454 Q453
IC101
Q451
Q452
IC405
IC31
IC202
IC21
IC20
IC401
VR102
VR103
VR151
VR152
Q101

*1

	D391
PD-T510 /KC, WPW	USED
PD-T310*, PD-T510 /RD, WEMXK	SHROT

*2

	R447 R448
PD-T310/WEMXK, PD-T510*	USED
PD-T310 /KC, WPW, RD	SHROT

*3

	IC31
WEMXK Type	USED
KC, WPW, RD Types	SHROT

*4

	PD-T310*	PD-T510*
CN351 CN701	30pin	32pin

*5

	J1	J2	J3	J4
PD-T510 /KC, WPW	USED	USED	UNUSED	USED
PD-T510 /WEMXK, RD	UNUSED	UNUSED	USED	UNUSED
PD-T310*	UNUSED	USED	UNUSED	USED

IC301
IC151
Q322
IC351
IC201

PD-T310/WEMXK, PD-T510* Only.

HEADPHONE BOARD ASSEMBLY

CMK-54XT

JA501

PWZ2298-2299-A

VR102 TR. BAL
VR103 FO. OFS
VR151 TR. GA
VR152 FO. GA

TP1
1. RF
2. TRK ERR
3. TRK IN
4. GND
5. FCS IN
6. FCS ERR

NOTE:

PD-T310* : PD-T310/KC, WPW, WEMXK, and RD.
PD-T510* : PD-T510/KC, WPW, WEMXK, and RD.
KC Type : PD-T310/KC and PD-T510/KC.
WPW Type : PD-T310/WPW and PD-T510/WPW.
WEMXK Type : PD-T310/WEMXK and PD-T510/WEMXK.
RD Type : PD-T310/RD and PD-T510/RD.

*1

	D391
PD-T510/KC, WPW	USED
PD-T310*, PD-T510/RD, WEMXK	SHORT

*2

	R447 R448
PD-T310/WEMXK, PD-T510*	USED
PD-T510/KC, WPW, RD	SHORT

*3

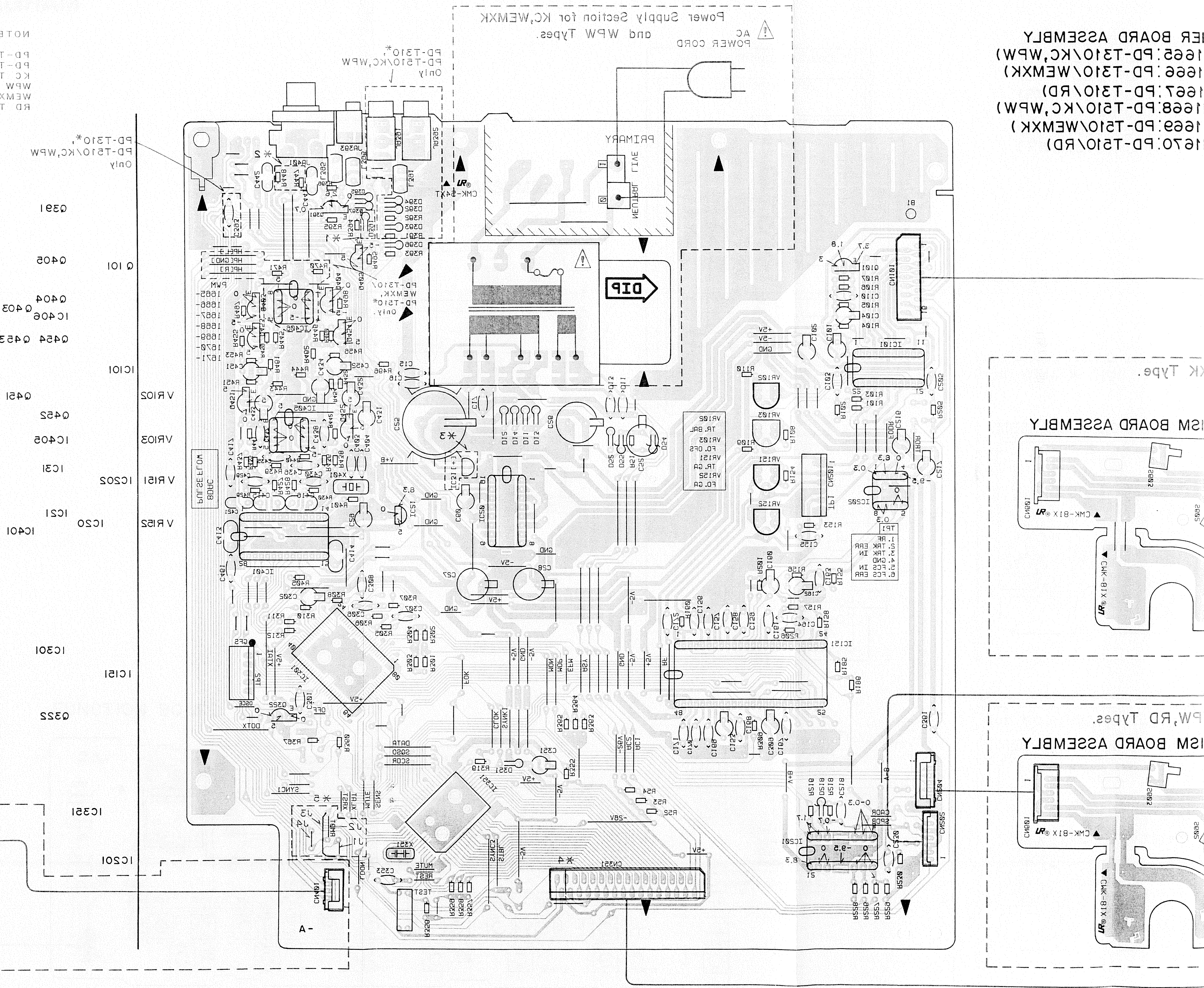
	IC31
WEMXK Type	USED
KC, WPW, RD Types	SHORT

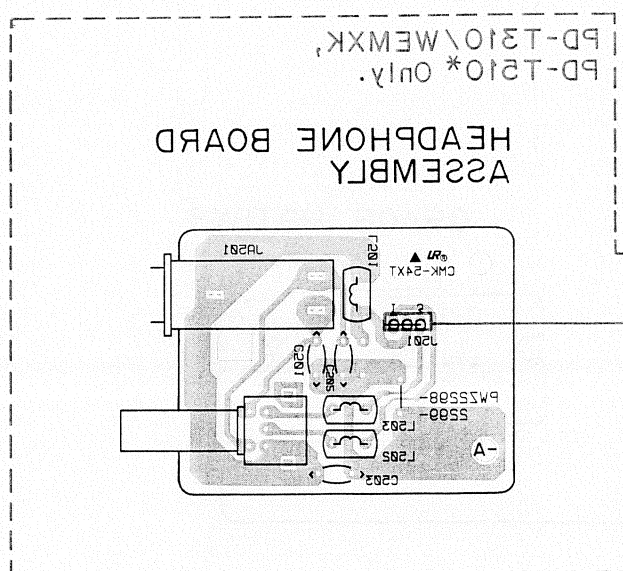
*4

	PD-T310*	PD-T510*
CN351 CN701	30pin	32pin

*5

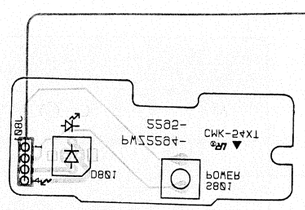
	J1	J2	J3	J4
PD-T510/KC, WPW	USED	USED	UNUSED	USED
PD-T510/WEMXK, RD	UNUSED	UNUSED	USED	UNUSED
PD-T310*	UNUSED	USED	UNUSED	USED

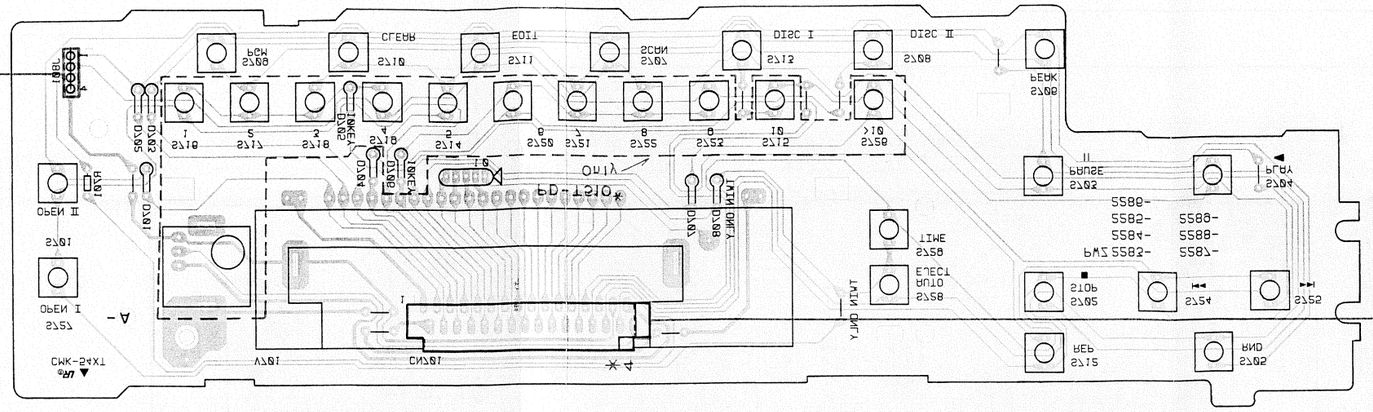


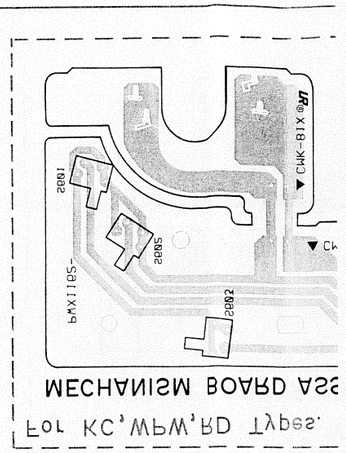


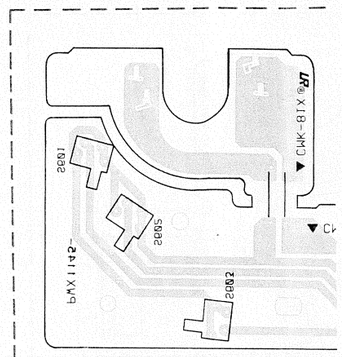
e. PCB CONNECTIONS DIAGRAM

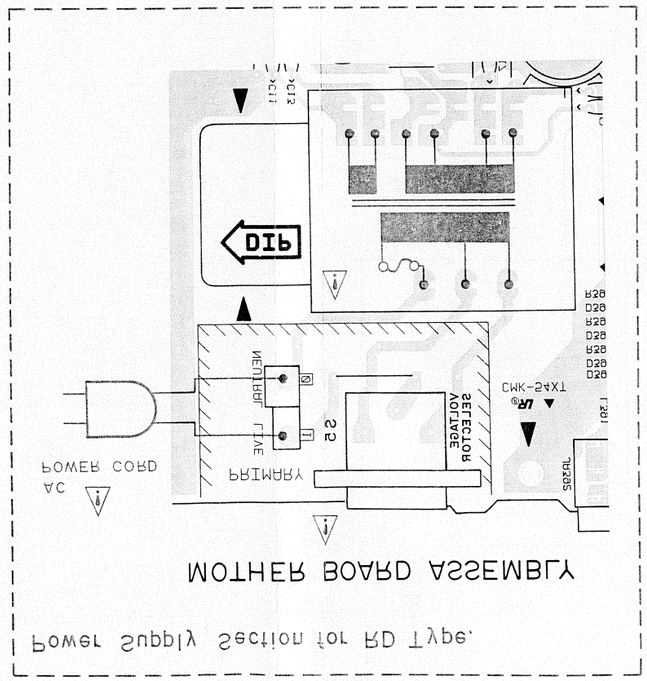
• View from soldering side

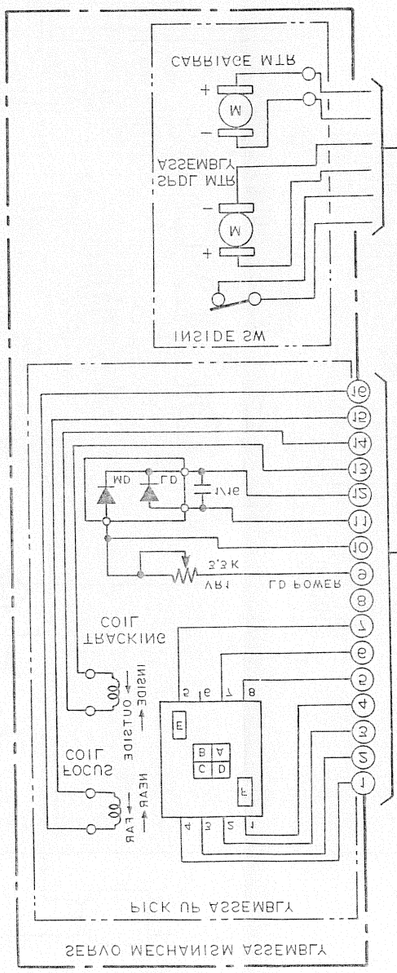












7. PCB PARTS LIST

NOTES:

- Parts marked by "NSP" are generally unavailable because they are not in our Master Spare Parts List.
- Parts marked by "⊙" are not always kept in stock. Their delivery time may be longer than usual or they may be unavailable.
- The ⚠ mark found on some component parts indicates the importance of the safety factor of the part. Therefore, when replacing, be sure to use parts of identical designation.
- When ordering resistors, first convert resistance values into code form as shown in the following examples.

Ex.1 When there are 2 effective digits (any digit apart from 0), such as 560 ohm and 47k ohm (tolerance is shown by J=5%, and K=10%)

560 Ω → 56 × 10^1 → 561 ····· RD1/4PS 5 6 1 J
47k Ω → 47 × 10^3 → 473 ····· RD1/4PS 4 7 3 J
0.5 Ω → 0R5 ····· RN2H 0 R 5 K
1 Ω → 010 ····· RS1P 0 1 0 K

Ex.2 When there are 3 effective digits (such as in high precision metal film resistors).

5.62k Ω → 562 × 10^1 → 5621 ····· RN1/4SR 5 6 2 1 F

Mark	No.	Description	Part No.

LIST OF ASSEMBLIES

FOR PD-T510/KC

⊙		MOTHER BOARD ASSEMBLY	PWM1668
⊙		SUB BOARD ASSEMBLY	PWX1219
NSP		├─FUNCTION BOARD ASSEMBLY	PWZ2288
NSP		├─SWITCH BOARD ASSEMBLY	PWZ2294
NSP		└─HEADPHONE BOARD ASSEMBLY	PWZ2298
NSP		MECHANISM BOARD ASSEMBLY	PWX1162

FOR PD-T310/KC

⊙		MOTHER BOARD ASSEMBLY	PWM1665
⊙		SUB BOARD ASSEMBLY	PWX1217
NSP		├─FUNCTION BOARD ASSEMBLY	PWZ2287
NSP		└─SWITCH BOARD ASSEMBLY	PWZ2294
NSP		MECHANISM BOARD ASSEMBLY	PWX1162

MOTHER BOARD ASSEMBLY (For PD-T310/KC)

SEMICONDUCTORS

⚠	IC20	REGULATOR IC	TA2019P
	IC21	REGULATOR IC	NJM2930L05
	IC101	PRE AMP IC	CXA1471S
	IC151	SERVO IC	CXA1372S
⚠	IC201	POWER OP-AMP IC	LA6520
⚠	IC202	POWER OP-AMP IC	LA6517
	IC301	EFM DEMODULATION IC	CXD2500AQ
	IC351	MICROCOMPUTER IC	PD4395A
	IC401	D/A CONVERTER IC	PD2026A
	IC405	OP-AMP IC	NJM4558D-D
	Q101	TRANSISTOR	2SA854S
	Q322	TRANSISTOR	DTC124ES
	Q391	TRANSISTOR	2SC1740S
	Q403, 404	TRANSISTOR	2SD2144S
	Q405	TRANSISTOR	DTC124ES
	Q451, 452	TRANSISTOR	DTA124ES
	Q453, 454	TRANSISTOR	2SB1296
⚠	D11-14	DIODE	11ES2
⚠	D52	DIODE	11ES2
	D54	ZENNER DIODE	MTZJ18B
	D218	ZENNER DIODE	MTZJ6.2B
	D351	DIODE	1SS254
	D392-397	DIODE	1SS254

COILS/TRANSFORMERS

	L391	AXIAL INDUCTOR	LAU010K
	L395, 396	AXIAL INDUCTOR	LAU010K

CAPACITORS

	C11	CERAMIC CAPACITOR	CKCYF103Z50
	C13	CERAMIC CAPACITOR	CKCYF103Z50
	C15-17	CERAMIC CAPACITOR	CKCYF103Z50
	C25	ELECT. CAPACITOR	CEAS332M16
	C26	ELECT. CAPACITOR	CEAS102M16
	C27	ELECT. CAPACITOR	CEAS471M6R3
	C28	ELECT. CAPACITOR	CEAS101M10
	C29	ELECT. CAPACITOR	CEAS471M6R3
	C52	ELECT. CAPACITOR	CEAS101M35
	C60	ELECT. CAPACITOR	CEAS010M50
	C101, 102	ELECT. CAPACITOR	CEAS101M10
	C103	CERAMIC CAPACITOR	CCCCH200J50
	C104	ELECT. CAPACITOR	CEAS101M10
	C110	CERAMIC CAPACITOR	CKCYF103Z50
	C153	ELECT. CAPACITOR	CEAS101M10
	C155	CERAMIC CAPACITOR	CKCYB182K50
	C156	CERAMIC CAPACITOR	CGCYX333K25
	C157	CERAMIC CAPACITOR	CGCYX103K25
	C158, 159	CERAMIC CAPACITOR	CGCYX104K25
	C160	ELECT. CAPACITOR	CEAS4R7M50
	C161	CERAMIC CAPACITOR	CGCYX104K25
	C162	ELECT. CAPACITOR	CEAS010M50
	C163	CERAMIC CAPACITOR	CGCYX104K25
	C164	CERAMIC CAPACITOR	CGCYX103K25
	C167	CERAMIC CAPACITOR	CKCYF103Z50
	C168	CERAMIC CAPACITOR	CGCYX333K25
	C169	CERAMIC CAPACITOR	CGCYX103K25
	C170	CERAMIC CAPACITOR	CKCYB332K50
	C171, 172	CERAMIC CAPACITOR	CKCYB472K50
	C205	CERAMIC CAPACITOR	CKCYF103Z50
	C216, 217	ELECT. CAPACITOR	CEAS330M16
	C218	CERAMIC CAPACITOR	CGCYX103K25
	C230	CERAMIC CAPACITOR	CGCYX104K25
	C301	CERAMIC CAPACITOR	CGCYX104K25
	C302	ELECT. CAPACITOR	CEAS471M6R3
	C306	CERAMIC CAPACITOR	CKCYB152K50
	C307	CERAMIC CAPACITOR	CGCYX473K25
	C308	CERAMIC CAPACITOR	CGCYX103K25

Mark	No.	Description	Part No.
	C309	ELECT. CAPACITOR	CEASR47M50
	C351	ELECT. CAPACITOR	CEAS471M6R3
	C353	CERAMIC CAPACITOR	CKCYF103Z50
	C361	CERAMIC CAPACITOR	CKCYF103Z50
	C393	CERAMIC CAPACITOR	CCCSL101J50
	C403	CERAMIC CAPACITOR	CCCCH120J50
	C404	CERAMIC CAPACITOR	CCCCH220J50
	C413-416	FILM CAPACITOR (104K)	PCL1032
	C417	CERAMIC CAPACITOR	CKCYF103Z50
	C421	FILM CAPACITOR (104K)	PCL1032
	C429, 430	CERAMIC CAPACITOR	CCCCH390J50
	C431, 432	ELECT. CAPACITOR	CEAS330M16
	C433, 434	ELECT. CAPACITOR	CEAS220M25
	C435-438	CERAMIC CAPACITOR	CCCCH390J50
	C441, 442	FILM CAPACITOR (152J)	PCL1030
	C451, 452	ELECT. CAPACITOR	CEAS4R7M50
	C461	CERAMIC CAPACITOR	CKCYF103Z50
	RESISTORS		
	R51-54	CARBONFILM RESISTOR	RD1/6PM□□□J
	R101-110	CARBONFILM RESISTOR	RD1/6PM□□□J
	R153-158	CARBONFILM RESISTOR	RD1/6PM□□□J
	R160	CARBONFILM RESISTOR	RD1/6PM□□□J
	R185, 186	CARBONFILM RESISTOR	RD1/6PM□□□J
	R201	CARBONFILM RESISTOR	RD1/6PM□□□J
	R205, 206	CARBONFILM RESISTOR	RD1/6PM□□□J
	R216	CARBONFILM RESISTOR	RD1/6PM□□□J
	R218	CARBONFILM RESISTOR	RD1/6PM□□□J
	R226-230	CARBONFILM RESISTOR	RD1/6PM□□□J
	R301-312	CARBONFILM RESISTOR	RD1/6PM□□□J
	R319	CARBONFILM RESISTOR	RD1/6PM□□□J
	R355-360	CARBONFILM RESISTOR	RD1/6PM□□□J
	R363-365	CARBONFILM RESISTOR	RD1/6PM□□□J
	R367	CARBONFILM RESISTOR	RD1/6PM□□□J
	R391-396	CARBONFILM RESISTOR	RD1/6PM□□□J
	R401	CARBONFILM RESISTOR	RD1/6PM□□□J
	R405	CARBONFILM RESISTOR	RD1/6PM□□□J
	R427-430	CARBONFILM RESISTOR	RD1/6PM□□□J
	R435-446	CARBONFILM RESISTOR	RD1/6PM□□□J
	R451-456	CARBONFILM RESISTOR	RD1/6PM□□□J
	R459-462	CARBONFILM RESISTOR	RD1/6PM□□□J
	R495-498	CARBONFILM RESISTOR	RD1/6PM□□□J
	VR102	VR	RCP1046
	VR103	VR	RCP1044
	VR151, 152	VR	RCP1046
	OTHERS		
	CN101	CONNECTOR	52045-1610
	CN351	CONNECTOR	HLEM30S-1
	JA391, 392	JACK/12V	PKN1004
	JA393	JACK	PKN1005
	JA401	JACK	PKB1009
	X351	CERAMIC RESONATOR (4.19M)	VSS1014
	X401	XTAL RES (OSC) (16.9344M)	PSS1008
⚠		TERMINAL	RKC-061

MOTHER BOARD ASSEMBLY (For PD-T510/KC)

Mark	No.	Description	Part No.
	SEMICONDUCTORS		
⚠	IC20	REGULATOR IC	TA2019P
	IC21	REGULATOR IC	NJM2930L05
	IC101	PRE AMP IC	CXA1471S
	IC151	SERVO IC	CXA1372S
⚠	IC201	POWER OP-AMP IC	LA6520
⚠	IC202	POWER OP-AMP IC	LA6517
	IC301	EFM DEMODULATION IC	CXD2500AQ
	IC351	MICROCOMPUTER IC	PD4395A
	IC401	D/A CONVERTER IC	PD2026A
	IC405	OP-AMP IC	NJM4565D-D
	IC406	OP-AMP IC	BA15218
	Q101	TRANSISTOR	2SA854S
	Q322	TRANSISTOR	DTC124ES
	Q391	TRANSISTOR	2SC1740S
	Q403, 404	TRANSISTOR	2SD2144S
	Q405	TRANSISTOR	DTC124ES
	Q451, 452	TRANSISTOR	DTA124ES
	Q453, 454	TRANSISTOR	2SB1296
⚠	D11-14	DIODE	11ES2
⚠	D52	DIODE	11ES2
	D54	ZENNER DIODE	MTZJ18B
	D218	ZENNER DIODE	MTZJ6.2B
	D351	DIODE	1SS254
	D391-397	DIODE	1SS254
	COILS/TRANSFORMERS		
	L391	AXIAL INDUCTOR	LAU010K
	L395, 396	AXIAL INDUCTOR	LAU010K
	CAPACITORS		
	C11	CERAMIC CAPACITOR	CKCYF103Z50
	C13	CERAMIC CAPACITOR	CKCYF103Z50
	C15-17	CERAMIC CAPACITOR	CKCYF103Z50
	C25	ELECT. CAPACITOR	CEAS332M16
	C26	ELECT. CAPACITOR	CEAS102M16
	C27	ELECT. CAPACITOR	CEAS471M6R3
	C28	ELECT. CAPACITOR	CEAS101M10
	C29	ELECT. CAPACITOR	CEAS471M6R3
	C52	ELECT. CAPACITOR	CEAS101M35
	C60	ELECT. CAPACITOR	CEAS010M50
	C101, 102	ELECT. CAPACITOR	CEAS101M10
	C103	CERAMIC CAPACITOR	CCCCH200J50
	C104	ELECT. CAPACITOR	CEAS101M10
	C110	CERAMIC CAPACITOR	CKCYF103Z50
	C153	ELECT. CAPACITOR	CEAS101M10
	C155	CERAMIC CAPACITOR	CKCYB182K50
	C156	CERAMIC CAPACITOR	CGCYX333K25
	C157	CERAMIC CAPACITOR	CGCYX103K25
	C158, 159	CERAMIC CAPACITOR	CGCYX104K25
	C160	ELECT. CAPACITOR	CEAS4R7M50
	C161	CERAMIC CAPACITOR	CGCYX104K25
	C162	ELECT. CAPACITOR	CEAS010M50
	C163	CERAMIC CAPACITOR	CGCYX104K25
	C164	CERAMIC CAPACITOR	CGCYX103K25
	C167	CERAMIC CAPACITOR	CKCYF103Z50
	C168	CERAMIC CAPACITOR	CGCYX333K25
	C169	CERAMIC CAPACITOR	CGCYX103K25
	C170	CERAMIC CAPACITOR	CKCYB332K50
	C171, 172	CERAMIC CAPACITOR	CKCYB472K50
	C205	CERAMIC CAPACITOR	CKCYF103Z50
	C216, 217	ELECT. CAPACITOR	CEAS330M16
	C218	CERAMIC CAPACITOR	CGCYX103K25
	C230	CERAMIC CAPACITOR	CGCYX104K25
	C301	CERAMIC CAPACITOR	CGCYX104K25
	C302	ELECT. CAPACITOR	CEAS471M6R3

Mark	No.	Description	Part No.
	C306	CERAMIC CAPACITOR	CKCYB152K50
	C307	CERAMIC CAPACITOR	CGCYX473K25
	C308	CERAMIC CAPACITOR	CGCYX103K25
	C309	ELECT. CAPACITOR	CEASR47M50
	C351	ELECT. CAPACITOR	CEAS471M6R3
	C353	CERAMIC CAPACITOR	CKCYF103Z50
	C361	CERAMIC CAPACITOR	CKCYF103Z50
	C393	CERAMIC CAPACITOR	CCCSL101J50
	C403	CERAMIC CAPACITOR	CCCCH120J50
	C404	CERAMIC CAPACITOR	CCCCH220J50
	C413-416	FILM CAPACITOR (104K)	PCL1032
	C417	CERAMIC CAPACITOR	CKCYF103Z50
	C421	FILM CAPACITOR (104K)	PCL1032
	C429, 430	CERAMIC CAPACITOR	CCCCH390J50
	C431, 432	ELECT. CAPACITOR	CEAS330M16
	C433, 434	CAPACITOR (22/25)	PCH1107
	C435-438	CERAMIC CAPACITOR	CCCCH390J50
	C441, 442	FILM CAPACITOR	PCL1030
	C451, 452	ELECT. CAPACITOR	CEAS4R7M50
	C461	CERAMIC CAPACITOR	CKCYF103Z50
RESISTORS			
	R51-54	CARBONFILM RESISTOR	RD1/6PM□□□J
	R101-110	CARBONFILM RESISTOR	RD1/6PM□□□J
	R153-158	CARBONFILM RESISTOR	RD1/6PM□□□J
	R160	CARBONFILM RESISTOR	RD1/6PM□□□J
	R185, 186	CARBONFILM RESISTOR	RD1/6PM□□□J
	R201	CARBONFILM RESISTOR	RD1/6PM□□□J
	R205, 206	CARBONFILM RESISTOR	RD1/6PM□□□J
	R216	CARBONFILM RESISTOR	RD1/6PM□□□J
	R218	CARBONFILM RESISTOR	RD1/6PM□□□J
	R226-230	CARBONFILM RESISTOR	RD1/6PM□□□J
	R301-312	CARBONFILM RESISTOR	RD1/6PM□□□J
	R319	CARBONFILM RESISTOR	RD1/6PM□□□J
	R355-360	CARBONFILM RESISTOR	RD1/6PM□□□J
	R363-365	CARBONFILM RESISTOR	RD1/6PM□□□J
	R367	CARBONFILM RESISTOR	RD1/6PM□□□J
	R391-396	CARBONFILM RESISTOR	RD1/6PM□□□J
	R401	CARBONFILM RESISTOR	RD1/6PM□□□J
	R405	CARBONFILM RESISTOR	RD1/6PM□□□J
	R427-430	CARBONFILM RESISTOR	RD1/6PM□□□J
	R435-448	CARBONFILM RESISTOR	RD1/6PM□□□J
	R451-456	CARBONFILM RESISTOR	RD1/6PM□□□J
	R459-462	CARBONFILM RESISTOR	RD1/6PM□□□J
	R470, 471	CARBONFILM RESISTOR	RD1/6PM□□□J
	R495-498	CARBONFILM RESISTOR	RD1/6PM□□□J
	VR102	VR(223)	RCP1046
	VR103	VR(102)	RCP1044
	VR151, 152	VR(223)	RCP1046
OTHERS			
	CN101	CONNECTOR	52045-1610
	CN351	CONNECTOR	HLEM32S-1
	JA391, 392	JACK/12V	PKN1004
	JA393	JACK	PKN1005
	JA401	JACK	PKB1009
	X351	CERAMIC RESONATOR (4.19M)	VSS1014
	X401	XTAL RES (OSC) (16.9344M)	PSS1008
⚠		TERMINAL	RKC-061

Mark	No.	Description	Part No.
MECHANISM BOARD ASSEMBLY			
SWITCHES			
	S601-603	PUSH SWITCH	DSG1017
FUNCTION BOARD ASSEMBLY (For PD-T310/KC)			
SEMICONDUCTORS			
	D701-704	DIODE	1SS254
	D707, 708	DIODE	1SS254
SWITCHES			
	S701-713	SWITCH	PSG1006
	S724, 725	SWITCH	PSG1006
	S727-729	SWITCH	PSG1006
RESISTORS			
	R701	CARBONFILM RESISTOR	RD1/6PM□□□J
OTHERS			
	CN701	CONNECTOR	HLEM30R-1
	V701	FL INDICATOR TUBE	PEL1066
FUNCTION BOARD ASSEMBLY (For PD-T510/KC)			
SEMICONDUCTORS			
	D701-708	DIODE	1SS254
SWITCHES			
	S701-729	SWITCH	PSG1006
	REMOTE	SENSOR	SBX1610-51
RESISTORS			
	R701	CARBONFILM RESISTOR	RD1/6PM□□□J
OTHERS			
	CN701	CONNECTOR	HLEM32R-1
	V701	FL INDICATOR TUBE	PEL1066
SWITCH BOARD ASSEMBLY			
SEMICONDUCTORS			
	D801	LED	PCX1019
SWITCHES			
	S801	SWITCH	PSG1006
HEADPHONE BOARD ASSEMBLY (For PD-T510/KC)			
COILS/TRANSFORMERS			
	L501	AXIAL COIL	LAUR22K
	L502, 503	AXIAL INDUCTOR	LAU010K
CAPACITORS			
	C501, 502	CERAMIC CAPACITOR	CKCYF103Z50
	C503	CERAMIC CAPACITOR	CKCYF473Z50
RESISTORS			
	VR501	VARIABLE RESISTOR (5K-B×2)	PCS1003
OTHERS			
	JA501	JACK	RKN1002

8. ADJUSTMENTS

1. Adjustment Methods

If a disc player is adjusted incorrectly or inadequately, it may malfunction or not work at all even though there is nothing at all wrong with the pickup or the circuitry. Adjust correctly following the adjustment procedure.

1-1 Adjustment items/verification items and order

Step	Item	Test point	Adjustment location
1	Focus offset adjustment	TP1, Pin 6 (FCS. ERR)	VR103 (FCS. OFS)
2	Grating adjustment	TP1, Pin 2 (TRK. ERR)	Grating adjustment slit
3	Tracking error balance adjustment	TP1, Pin 2 (TRK. ERR)	VR102 (TRK. BAL)
4	Pickup radial/ tangential direction tilt adjustment	TP1, Pin 1 (RF)	Radial tilt adjustment screw, Tangential tilt adjustment screw
5	RF level adjustment	TP1, Pin 1 (RF)	VR1 (RF level)
6	Focus servo loop gain adjustment	TP1, Pin 5 (FCS. IN) TP1, Pin 6 (FCS. ERR)	VR152 (FCS. GAN)
7	Tracking servo loop gain adjustment	TP1, Pin 3 (TRK. IN) TP1, Pin 2 (TRK. ERR)	VR151 (TRK. GAN)
8	Focus error signal verification	TP1, Pin 6 (FCS. ERR)	———

● **Abbreviation table**

FCS ERR : Focus Error
FCS OFS : Focus Offset
TRK ERR : Tracking Error
TRK BAL : Tracking Balance
FCS GAN : Focus Gain
TRK GAN : Tracking Gain
FCS IN : Focus In
TRK IN : Tracking In

1-2 Measuring instruments and tools

1. Dual trace oscilloscope (10:1 probe)
2. Low-frequency oscillator
3. Test disc (YEDS-7)
4. 12-cm disc (with at least about 70 minutes of recording)
5. Low-pass filter (39 kΩ + 0.001 μF)
6. Resistor (100 kΩ)
7. Hex. wrench (L-shaped type, Size: 1.5 mm)
8. Standard tools

1-3 Test point and adjustment variable resistor positions

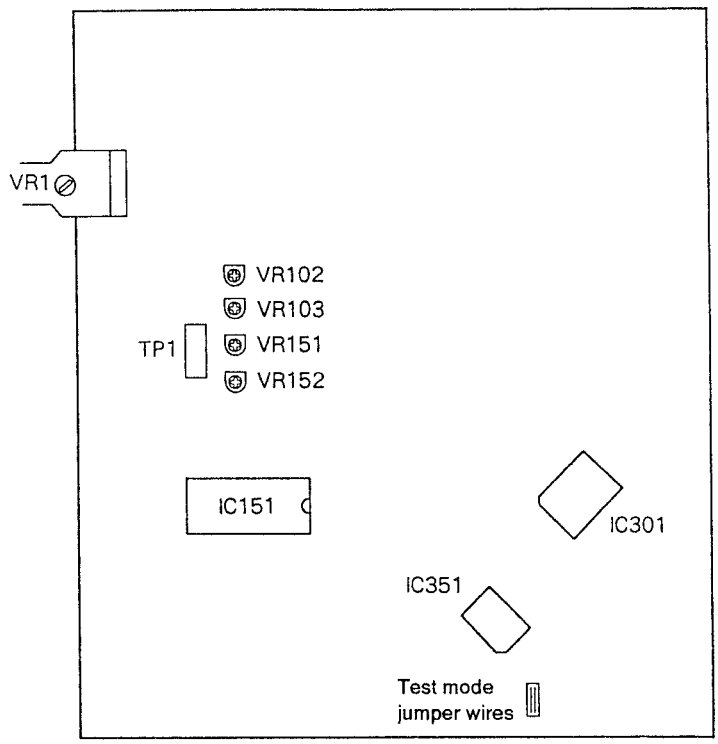


Figure 1 Adjustment Locations

1-4 Notes

1. Use a 10:1 probe for the oscilloscope.
2. All the knob positions (settings) for the oscilloscope in the adjustment procedures are for when a 10:1 probe is used.

1-5 Test mode

These models have a test mode so that the adjustments and checks required for service can be carried out easily. When these models are in test mode, the keys on the front panel work differently from normal. Adjustments and checks can be carried out by operating these keys with the correct procedure. For these models, all adjustments are carried out in test mode.

[Setting these models to test mode]

How to set this model into test mode.

1. Unplug the power cord from the AC socket.
2. Short the test mode jumper wires. (See Figure 1.)
3. Plug the power cord back into the AC socket.

When the test mode is set correctly, the display is different from what it usually is when the power is turned on. If the display is still the same as usual, test mode has not been set correctly, so repeat Steps 1-3.

[Release from test mode]

Here is the procedure for releasing the test mode:
1. Press the STOP key to stop all operations.
2. Unplug the power cord from the AC socket.

[Operations of the keys in test mode]

Code	Key name	Function in test mode	Explanation
	PGM (PROGRAM)	Focus servo close	If Disc Tray 1 is closed, Disk Tray 1 is moved to the play position. Then the laser diode is lit up and the focus actuator is lowered, then raised slowly and the focus servo is closed at the point where the objective lens is focused on the disc. With the player in this state, if you lightly rotate the stopped disc by hand, you can hear the sound the focus servo. If you can hear this sound, the focus servo is operating correctly. If you press this key with no disc mounted, the laser diode lights up, the focus actuator is pulled down, then the actuator is raised and lowered twice and returned to its original position.
►	PLAY	Spindle servo ON	Starts the spindle motor in the clockwise direction and when the disc rotation reaches the prescribed speed (about 500 rpm at the inner periphery), sets the spindle servo in a closed loop. Be careful. Pressing this key when there is no disc mounted makes the spindle motor run at the maximum speed. If the focus servo does not go correctly into a closed loop or the laser light shines on the mirror section at the outermost periphery of the disc, the same symptom is occurred.
❚❚	PAUSE	Tracking servo close/open	Pressing this key when the focus servo and spindle servo are operating correctly in closed loops puts the tracking servo into a closed loop, displays the track number being played back and the elapsed time on the front panel, and outputs the playback signal. If the elapsed time is not displayed or not counted correctly or the audio is not played back correctly, it may be that the laser is shining on the section with no sound recorded at the outer edge of the disc, that something is out of adjustment, or that there is some other problem. This key is a toggle key and open/close the tracking servo alternately. This key has no effect if no disc is mounted.
⏮/ ◄◄	TRACK/ MANUAL SEARCH REV	Carriage reverse (inwards)	Moves the pickup position toward the inner periphery of the disc. When this key is pressed with the tracking servo in a closed loop, the tracking servo automatically goes into an open loop. Since the pickup does not automatically stop at the mechanical end point in test mode, be careful with this operation.
►►/ ⏭	TRACK/ MANUAL SEARCH FWD	Carriage forward (outwards)	Moves the pickup position toward the outer periphery of the disc. When this key is pressed with the tracking servo in a closed loop, the tracking servo automatically goes into an open loop. Since the pickup does not automatically stop at the mechanical end point in test mode, be careful with this operation.
■	STOP	Stop	Switches off all the servos and initializes. The pickup remains where it was when this key was pressed.
▲	OPEN/CLOSE DISC 1	Disc tray open/close	Opens/closes the disc tray. This key is a toggle key and open/close tray alternately.

[How to play back a disc in test mode]

In test mode, since the servos operate independently, playing back a disc requires that you operate the keys in the correct order to close the servos.
Here is the key operation sequence for playing back a disc in test mode.

PGM (PROGRAM)	Lights up the laser diode and closes the focus servo.
⇓	
PLAY ►	Starts the spindle motor and closes the spindle servo.
⇓	
PAUSE ▮▮	Closes the tracking servo.

Wait at least 2-3 seconds between each of these operations.

1. Focus offset adjustment

● Objective ● Symptom when out of adjustment	Sets the DC offset for the focus error amp. The player does not focus in and the RF signal is dirty.		
● Measurement instrument connections	Connect the oscilloscope to TP1, Pin 6 (FCS ERR). [Settings] 5 mV/division 10 ms/division DC mode	● Player state ● Adjustment location ● Disc	Test mode, stopped (just the Power switch on) VR103 (FCS OFS) None needed
[Procedure] Adjust VR103 (FCS OFS) so that the DC voltage at TP1, Pin 6 (FCS ERR) is –150 ± 50 mV.			

2. Grating adjustment

● Objective	To align the tracking error generation laser beam spots to the optimum angle on the track		
● Symptom when out of adjustment	Play does not start, track search is impossible, tracks are skipped.		
● Measurement instrument connections	Connect the oscilloscope to TP1, Pin 2 (TRK ERR) via a low pass filter. (See Figure 2) [Settings] 50 mV/division 5 ms/division DC mode	● Player state	Test mode, focus and spindle servos closed and tracking servo open
		● Adjustment location	Pickup grating adjustment slit
		● Disc	12 cm disc. (YEDS-7 can not be used.)

[Procedure]

1. Move the pickup to the outer edge of the disc with the TRACK/MANUAL SEARCH FWD ▶▶ / ▶▶| or REV |◀◀ / ◀◀ key so that the grating adjustment slit is at the outer edge of the disc where it can be adjusted.
2. Press the PGM (PROGRAM) key, then the PLAY ▶ key in that order to close the focus servo then the spindle servo.
3. Insert a screwdriver into the grating adjustment slit and adjust the grating to find the null point. For more details, see the next page.
4. If you slowly turn the screwdriver counterclockwise from the null point, the amplitude of the wave gradually increases, then if you continue turning the screwdriver, the amplitude of the wave becomes smaller again. Turn the screwdriver counterclockwise from the null point and set the grating to the first point where the wave amplitude reaches its maximum.

   Reference: Figure 3 shows the relation between the angle of the tracking beam with the track and the waveform.

   Note: The amplitude of the tracking error signal is about 3 Vp-p (when a 39 kΩ + 0.001 μF low pass filter is used). If this amplitude is extremely small (2 Vp-p or less), the objective lens or the pickup malfunction may be the cause. If the difference between the amplitude of the error signal at the innermost edge and outermost edge of the disc is more than 10%, the grating is not adjusted to the optimum point, so adjust it again.
5. Return the pickup to more or less midway across the disc with the TRACK/MANUAL SEARCH REV |◀◀ / ◀◀ key, press the PAUSE ▮▮ key and check that the track number and elapsed time are displayed on the front panel. If they are not displayed at this time or the elapsed time changes irregularly, check the null point and adjust the grating again.

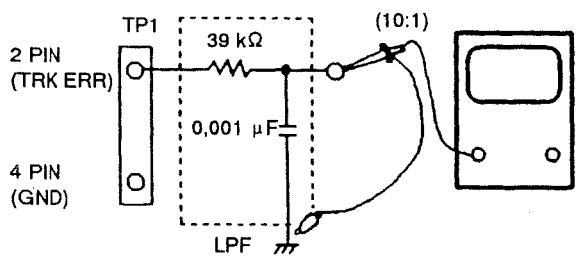
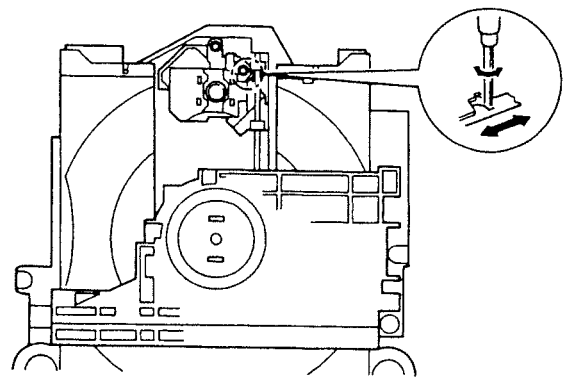


Figure 2



Adjustment Locations

[How to find the null point]

When you insert the screwdriver into the slit for the grating adjustment and change the grating angle, the amplitude of the tracking error signal at TP1 Pin 2 changes. Within the range for the grating, there are five or six locations where the amplitude of the wave reaches a minimum. Of these five or six locations, there is only one at which the envelope of the waveform is smooth. This location is where the three laser beams divided by the grating are all right above the same track. (See Figure 3.)
This point is called the null point. When adjusting the grating, this null point is found and used as the reference position.

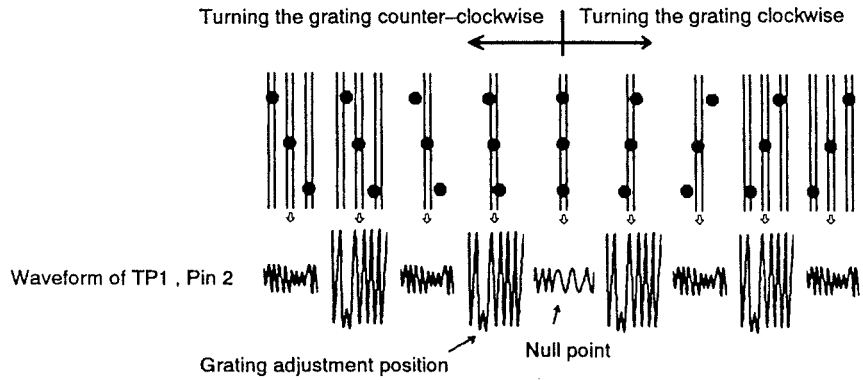
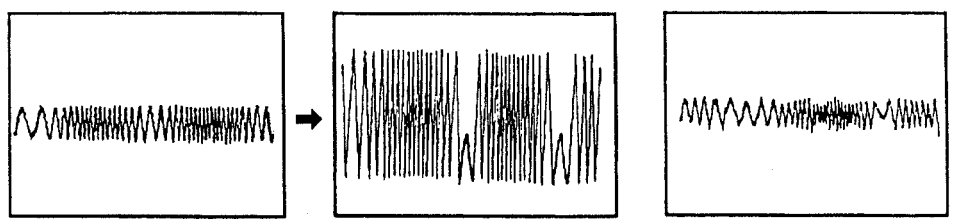


Figure 3



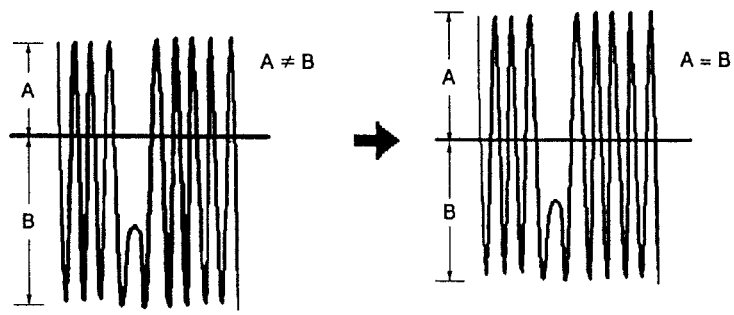
Nullo point waveform | Maximum amplitude waveform | Waveform other than the null point

3. Tracking error balance adjustment

● Objective	To correct for the variation in the sensitivity of the tracking photodiode		
● Symptom when out of adjustment	Play does not start or track search is impossible		
● Measurement instrument connections	Connect the oscilloscope to TP1, Pin 2 (TRK ERR). This connection may be via a low pass filter. [Settings] 50 mV/division 5 ms/division DC mode	● Player state ● Adjustment location ● Disc	Test mode, focus and spindle servos closed and tracking servo open VR102 (TRK BAL) YEDS-7

[Procedure]

1. Move the pickup to midway across the disc (R = 35 mm) with the TRACK/MANUAL SEARCH FWD ▶▶ / ▶▶| or REV |◀◀ / ◀◀ key.
2. Press the PGM (PROGRAM) key, then the PLAY ▶ key in that order to close the focus servo then the spindle servo.
3. Line up the bright line (ground) at the center of the oscilloscope screen and put the oscilloscope into DC mode.
4. Adjust VR102 (TRK BAL) so that positive amplitude and negative amplitude of the tracking error signal at TP1 Pin 2 (TRK ERR) are the same (in other words, so that there is no DC component).



When there is a DC component

When there is no DC component

4. Pickup radial/tangential tilt adjustment

● Objective	To adjust the angle of the pickup relative to the disc so that the laser beams are shone straight down into the disc for the best read out of the RF signals.		
● Symptom when out of adjustment	Sound broken; some discs can be played but not others.		
● Measurement instrument connections	Connect the oscilloscope to TP1, Pin 1 (RF). [Settings] 20 mV/division 200 ns/division AC mode	● Player state	Test mode, play
		● Adjustment location	Pickup radial tilt adjustment screw and tangential tilt adjustment screw
		● Disc	12 cm disc. (YEDS-7 can not be used.)

[Procedure]

1. Move the pickup to the outer edge of the disc with the TRACK/MANUAL SEARCH FWD ▶▶ / ▶▶| or REV |◀◀ / ◀◀ key so that the radial/tangential tilt screws can be adjusted.
   Press the PGM (PROGRAM) key, the PLAY ▶ key, then the PAUSE ▮▮ key in that order to close the respective servos and put the player into play mode.
2. First, adjust the radial tilt adjustment screw with a hex. wrench (L-shaped type, Size: 1.5 mm) so that the eye pattern (the diamond shape at the center of the RF signal) can be seen the most clearly.
3. Next, adjust the tangential tilt adjustment screw with a hex. wrench (L-shaped type, Size: 1.5 mm) so that the eye pattern (the diamond shape at the center of the RF signal) can be seen the most clearly (Figure 5).
4. Adjust the radial tilt adjustment screw and the tangential tilt adjustment screw again so that the eye pattern can be seen the most clearly. As necessary, adjust the two screws alternately so that the eye pattern can be seen the most clearly.
5. When the adjustment is completed, lock the radial and tangential adjustment screw.

Note: Radial and tangential mean the directions relative to the disc shown in Figure 4.

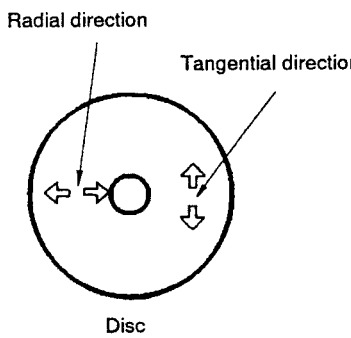
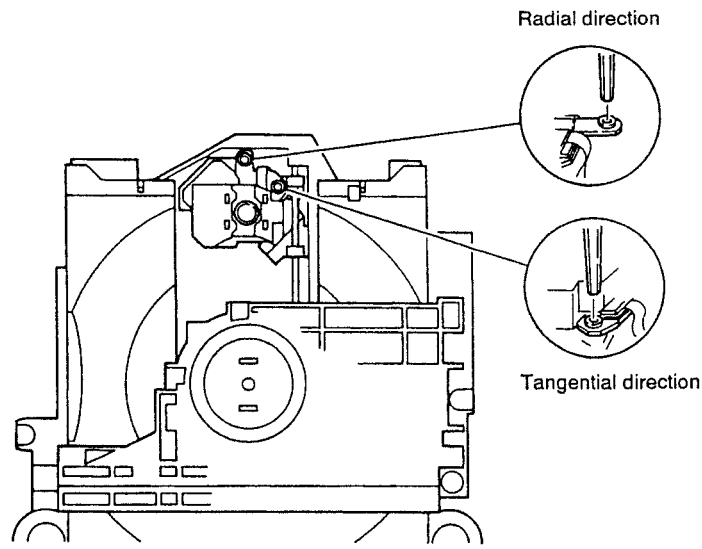


Figure 4



Adjustment Locations

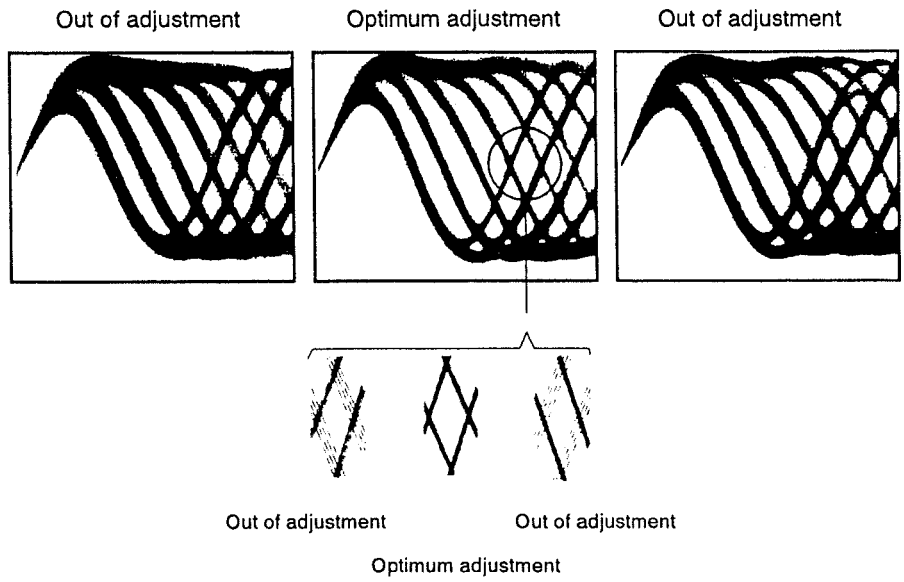


Figure 5 Eye Pattern

5. RF level adjustment

● Objective ● Symptom when out of adjustment	To optimize the playback RF signal amplitude No play or no search		
● Measurement instrument connections	Connect the oscilloscope to TP1, Pin 1 (RF). [Settings] 50 mV/division 10 ms/division AC mode	● Player state ● Adjustment location ● Disc	Test mode, play VR1 (laser power) YEDS-7

[Procedure]

1. Move the pickup to midway across the disc (R = 35 mm) with the MANUAL SEARCH FWD ▶▶ or REV ◀◀ key, then press the PGM (PROGRAM) key, the PLAY ▶ key, then the PAUSE ▮▮ key in that order to close the respective servos and put the player into play mode.
2. Adjust VR1 (laser power) so that the RF signal amplitude is 1.2 Vp-p ± 0.1V.

6. Focus servo loop gain adjustment

● Objective ● Symptom when out of adjustment	To optimize the focus servo loop gain Playback does not start or focus actuator noisy		
● Measurement instrument connections	See Figure 6. [Settings] CH1 CH2 20 mV/division 5 mV/division X-Y mode	● Player state ● Adjustment location ● Disc	Test mode, play VR152 (FCS GAN) YEDS-7

[Procedure]

1. Set the AF generator output to 1.2 kHz and 1 Vp-p.
2. Press the TRACK/MANUAL SEARCH FWD ▶▶ / ▶▶| or REV |◀◀ / ◀◀ key to move the pickup to halfway across the disc (R = 35 mm), then press the PGM (PROGRAM) key, the PLAY ▶ key, then the PAUSE ▮▮ key in that order to close the corresponding servos and put the player into play mode.
3. Adjust VR152 (FCS GAN) so that the Lissajous waveform is symmetrical about the X axis and the Y axis.

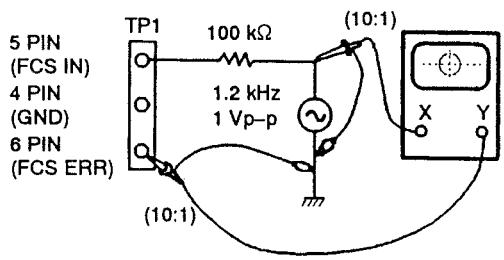
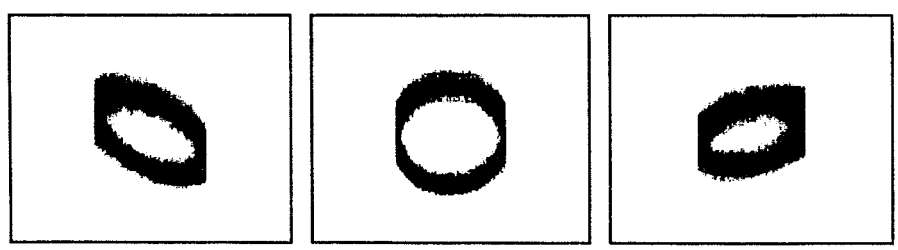


Figure 6

Focus Gain Adjustment



Higher gain | Optimum gain | Lower gain

7. Tracking servo loop gain adjustment

● Objective ● Symptom when out of adjustment	To optimize the tracking servo loop gain Playback does not start, during searches the actuator is noisy, or tracks are skipped.		
● Measurement instrument connections	See Figure 7. [Settings] CH1 CH2 50 mV/division 20 mV/division X-Y mode	● Player state ● Adjustment location ● Disc	Test mode, play VR151 (TRK GAN) YEDS-7

[Procedure]

1. Set the AF generator output to 1.2 kHz and 2 Vp-p.
2. Press the TRACK/MANUAL SEARCH FWD ▶▶ / ▶▶| or REV |◀◀ / ◀◀ key to move the pickup to halfway across the disc (R = 35 mm), then press the PGM (PROGRAM) key, the PLAY ▶ key, then the PAUSE ▮▮ key in that order to close the corresponding servos and put the player into play mode.
3. Adjust VR151 (TRK GAN) so that the Lissajous waveform is symmetrical about the X axis and the Y axis.

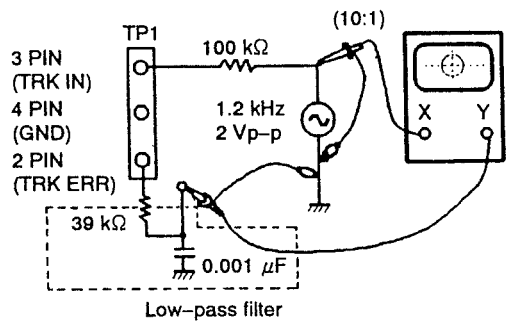
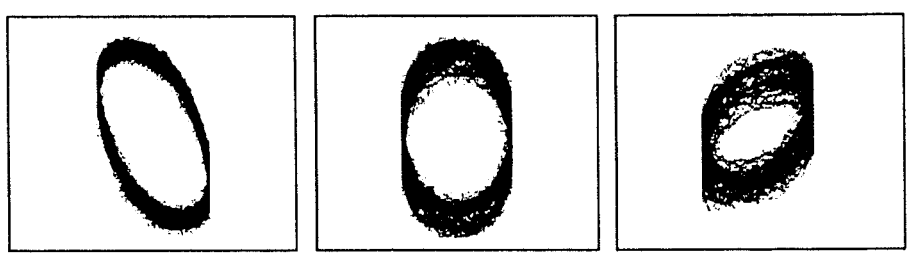


Figure 7

Tracking Gain Adjustment



Higher gain Optimum gain Lower gain

8. Focus error signal (focus S curve) verification

● Objective ● Symptom when out of adjustment	To judge whether the pickup is ok or not by observing the focus error signal. The pickup is judged from the amplitude of the tracking error signal (as discussed in the section on adjusting the tracking error balance) and the wave form for the focus error signal.		
● Measurement instrument connections	Connect the oscilloscope to TP1, Pin 6 (FCS ERR). [Settings] 100 mV/division 5 ms/division DC mode	● Player state ● Adjustment location ● Disc	Test mode, stop None YEDS-7

[Procedure]

1. Connect TP1 Pin 5 to ground.
2. Mount the disc.
3. While watching the oscilloscope screen, press the PGM (PROGRAM) key and observe the waveform in Figure 8 for a moment. Verify that the amplitude is at least 2.5 Vp-p and that the positive and negative amplitude are about equal. Since the waveform is only output for a moment when the PGM (PROGRAM) key is pressed, press this key over and over until you have checked the waveform.

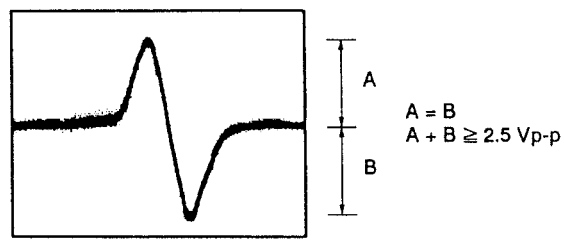


Figure 8

[Judging the pickup]

Do not judge the pickup until all the adjustments have been made correctly. In the following cases, there may be something wrong with the pickup.

1. The tracking error signal amplitude is extremely small (less than 2 Vp-p).
2. The focus error signal amplitude is extremely small (less than 2.5 Vp-p).
3. The positive and negative amplitudes of the focus error signal are extremely asymmetrical (2:1 ratio or more).
4. The RF signal is too small (less than 0.8 Vp-p) and even if VR1 is adjusted (laser power), the RF signal can not be brought up to the standard level.

8. REGLAGES

1. Méthodes de réglage

Si le lecteur CD est mal réglé, il risque de ne plus fonctionner normalement, voire ne plus fonctionner du tout, même si le capteur et la circuiterie ne présentent aucune anomalie. Par conséquent, ajuster le lecteur correctement en suivant les démarches de réglage.

1–1 Points de réglage/Points et ordre de vérification

Etape	Point	Point d'essai	Emplacement du réglage
1	Réglage du décalage de la mise au point	TP1, Broche 6 (FCS. ERR)	VR103 (FCS. OFS)
2	Réglage du réseau de diffraction	TP1, Broche 2 (TRK. ERR)	Fente de réglage du réseau de diffraction
3	Réglage d'équilibrage d'erreur d'alignement	TP1, Broche 2 (TRK. ERR)	VR102 (TRK. BAL)
4	Réglage d'inclinaison radiale/tangentielle du capteur	TP1, Broche 1 (RF)	Vis de réglage d'inclinaison radiale, Vis de réglage d'inclinaison tangentielle
5	Réglage du niveau RF	TP1, Broche 1 (RF)	VR1 (niveau RF)
6	Réglage de gain de boucle asservie de la mise au point	TP1, Broche 5 (FCS. IN) TP1, Broche 6 (FCS. ERR)	VR152 (FCS. GAN)
7	Réglage de gain de boucle asservie de l'alignement	TP1, Broche 3 (TRK. IN) TP1, Broche 2 (TRK. ERR)	VR151 (TRK. GAN)
8	Vérification du signal d'erreur de la mise au point	TP1, Broche 6 (FCS. ERR)	———

● **Tableau des abréviations**

FCS ERR : erreur de mise au point
FCS OFS : décalage de mise au point
TRK ERR : erreur d'alignement
TRK BAL : équilibrage d'erreur d'alignement
FCS GAN : Gain de mise au point
TRK GAN : Gain d'alignement
FCS IN : mise au point correcte
TRK IN : alignement correct

1–2 Instruments de mesure et outils

1. Oscilloscope cathodique à deux faisceaux (sonde 10:1)
2. Oscillateur de basse fréquence
3. Disque d'essai (YEDS–7)
4. Disque de 12 cm (avec au moins 70 minutes d'enregistrement)
5. Filtre passe-bas (39 kΩ + 0,001 μF)
6. Résistance (100 kΩ)
7. Six pans droite (L–forme, dimension: 1,5 mm)
8. Outils conventionnels

1-3 Point d'essai et positions de réglage de la résistance variable

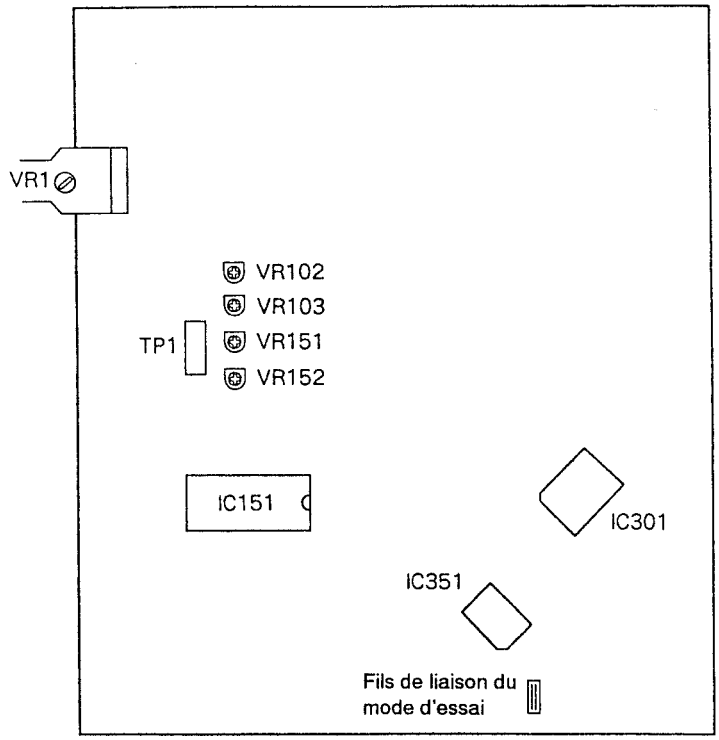


Figure 1 Emplacement des Réglages

1-4 Remarques

1. Utiliser une sonde 10:1 pour l'oscilloscope.
2. Toutes les positions (réglages) des boutons de l'oscilloscope, dans les démarches de réglage, sont conçues pour l'usage d'une sonde 10:1.

1-5 Mode d'essai

Ces modèles sont munis d'un mode d'essai, de façon que les réglages requis à la réparation puissent être effectués aisément. Quand ces modèles sont en mode d'essai, les touches du panneau avant ne fonctionnent pas comme à l'ordinaire. Les réglages et les vérifications peuvent s'effectuer par l'enclenchement de ces touches, à conditions de suivre les démarches requises. Dans le cas de ces modèles, tous les réglages sont réalisés en mode d'essai.

[Mise en mode d'essai]

Voici la manière de mettre le modèle en mode d'essai.
1. Débrancher le cordon d'alimentation de la prise secteur.
2. Court-circuiter les fils de liaison du mode d'essai. (voir Figure 1.)
3. Rebrancher le cordon d'alimentation dans la prise secteur.

Quand le mode d'essai est correctement réglé, l'affichage est différent de celui qui apparaît généralement à la mise sous tension. Si l'affichage reste le même, le mode d'essai n'a pas été réglé correctement. Dans ce cas, répéter les étapes 1 à 3.

[Pour sortir du mode d'essai]

Voici la procédure pour sortir du mode d'essai.

1. Appuyer sur la touche STOP pour arrêter toutes les opérations.
2. Débrancher le cordon d'alimentation de la prise secteur.

[Fonctionnement des touches en mode d'essai]

Code	Nom de la touche	Fonction en mode d'essai	Explications
	PGM (PROGRAM)	Fermeture du circuit asservi de la mise au point	Si le plateau n ° 1 est fermé, il se place en mode de lecture. Ensuite la diode laser s'allume et l'actuateur de la mise au point s'abaisse, puis se relève lentement et le circuit servo de la mise au point se ferme au point où la lentille de l'objectif se focalise sur le disque. Quand l'appareil est dans cet état, si l'on fait légèrement tourner à la main le disque arrêté, le bruit produit par le circuit servo de la mise au point sera audible. Si ce bruit est perçu, le circuit servo de la mise au point fonctionne correctement. Si cette touche est enclenchée et qu'aucun disque n'est installé, la diode laser s'allume, l'actuateur de la mise au point s'abaisse, se relève, puis s'abaisse une deuxième fois et enfin, revient à sa position de départ.
►	PLAY	Asservissement de rotation en service	Démarre le moteur de rotation dans le sens des aiguilles d'une montre, quand la rotation du disque atteint la vitesse prescrite (environ 500 tours/min à la circonférence interne) et place le circuit servo de rotation dans une boucle fermée. Attention. Si cette touche est enfoncée et qu'un disque n'est pas installé, le moteur de rotation va tourner á la vitesse maximum. Si le circuit servo de la mise au point ne passe pas comme prévu dans une boucle fermée ou que la diode laser brille dans le miroir à la périphérie externe du disque, le même symptôme se produit.
▮▮	PAUSE	Ouverture/Fermeture du circuit servo de l'alignement	Le fait d'appuyer sur cette touche quand le circuit servo de la mise au point et de la rotation fonctionnent correctement en boucles fermées, place le circuit servo de l'alignement dans une boucle fermée, fait apparaître, sur le panneau avant, le numéro de la piste en cours de lecture et la durée écoulée, puis sort le signal de lecture. Si la durée écoulée n'est pas affichée ou n'est pas correctement calculée, ou si la reproduction sonore est anormale, il se peut que la diode laser s'active dans la section dépourvue de signaux enregistrés, au bord externe du disque, qu'un ajustement quelconque soit déréglé, ou qu'un autre problème se manifeste. Cette touche est de type à bascule et ouvre/ferme alternativement le circuit servo de l'alignement. Cette touche est inopérante si un disque n'est pas installé.
⏮/ ◄◄	TRACK/ MANUAL SEARCH REV	Inversion du chariot (vers l'intérieur)	Déplace le capteur vers la périphérie interne du disque. Quand cette touche est enclenchée et que le circuit servo de l'alignement travaille en boucle fermée, celui-ci change automatiquement dans une boucle ouverte. Comme le capteur ne s'arrête pas automatiquement au point de fin mécanique du mode d'essai, effectuer cette démarche avec précaution.
►►/ ⏭	TRACK/ MANUAL SEARCH FWD	Inversion du chariot (vers l'extérieur)	Déplace le capteur vers la périphérie externe du disque. Quand cette touche est enclenchée et que le circuit servo de l'alignement travaille en boucle fermée, celui-ci change automatiquement dans une boucle ouverte. Comme le capteur ne s'arrête pas automatiquement au point de fin mécanique du mode d'essai, effectuer cette démarche avec précaution.
■	STOP	Arrêt	Met tous les circuits servo hors service et les initialise. Le capteur reste là où il était quand cette touche a été enclenchée.
⏏	OPEN/CLOSE DISC 1	Ouverture/Fermeture	Cette touche est de type à bascule et ouvre/ferme alternativement le plateau. Le fait d'enfoncer cette touche quand le plateau est ouvert le ferme et vice versa.

[Lecture de disque en mode d'essai]

En mode d'essai, comme les circuits servo fonctionnent de manière indépendante, la lecture d'un disque exige que les touches soient enclenchées dans l'ordre prescrit, afin de fermer les circuits servo.
Voici l'ordre d'enclenchement des touches pour reproduire un disque en mode d'essai.

PGM (PROGRAM)	Allume la diode laser et ferme le circuit servo de la mise au point.
⇓	
PLAY ►	Démarre le moteur de rotation et ferme le circuit servo de la rotation.
⇓	
PAUSE ▮▮	Ferme le circuit servo de l'alignement.

Attendre 2 à 3 secondes entre chaque opération.

1. Réglage du décalage de la mise au point

● Objectif ● Symptôme quand déréglé	Règle le décalage CC de l'amplificateur d'erreur de mise au point. Le lecteur ne procède plus à la mise au point et le signal RF n'est pas clair.		
● Raccordement des instruments de mesure	Raccorder l'oscilloscope à TP1, broche 6 (FCS ERR). [Réglages] 5 mV/division 10 ms/division mode CC	● Etat du lecteur ● Emplacement du réglage ● Disque	Mode d'essai, arrêté (juste l'interrupteur d'alimentation commuté sur marche) VR103 (FCS OFS) Aucun requis

[Marche à suivre]

Ajuster VR103 (FCS OFS) de façon que la tension à TP1 broche 6 (FCS ERR) soit −150 ± 50 mV.

2. Réglage du réseau de diffraction

● Objectif	Pour aligner les points du rayon laser producteur d'erreur d'alignement sur l'angle optimum de la piste		
● Symptôme quand déréglé	La lecture ne commence pas, la recherche de piste est impossible, les pistes sont sautées.		
● Raccordement des instruments de mesure	Raccorder l'oscilloscope à TP1, broche 2 (TRK ERR) via un filtre passe-bas. (Voir Figure 2) [Réglages] 50 mV/division 5 ms/division mode CC	● Etat du lecteur	Mode d'essai, circuits servo de la mise au point et de la rotation fermés, circuit servo de l'alignement ouvert
		● Emplacement du réglage	Fente de réglage du réseau de diffraction du capteur
		● Disque	Disque de 12 cm. (Il est impossible d'employer le disque YEDS-7).

[Marche à suivre]

1. Déplacer le capteur sur le bord externe du disque par la touche TRACK/MANUAL SEARCH FWD ▶▶ / ▶▶| ou la touche REV |◀◀ / ◀◀, de façon que la fente de réglage du réseau de diffraction se situe sur bord extérieur du disque, où elle peut être réglée.
2. Appuyer sur la touche PGM (PROGRAM), puis sur la touche PLAY ▶, dans cet ordre, pour fermer le circuit servo de la mise au point, puis celui de la rotation.
3. Insérer un tournevis dans le réseau de diffraction pour trouver le point zéro. Pour plus de détails, voir page suivante.
4. Si l'on tourne lentement le tournevis dans le sens contraire des aiguilles d'une montre à partir du point zéro, l'amplitude de l'onde augmente graduellement et si l'on continue à tourner le tournevis, l'amplitude de l'onde diminue de nouveau. Tourner le tournevis dans le sens contraire des aiguilles d'une montre à partir du point zéro et régler le réseau de diffraction au premier point où l'amplitude de l'onde atteint son maximum.

   Référence: La Figure 3 illustre la relation entre l'angle du faisceau de l'alignement et la piste et la forme d'onde.

   Remarque: L'amplitude du signal d'erreur d'alignement se situe aux environs de 3 Vc-c (quand un filtre passe-bas de 39 kΩ + 0,001 µF est utilisé). Si cette amplitude est extrêmement petite (2 Vc-c ou moins), il peut s'ensuivre un mauvais fonctionnement de la lentille d'objectif ou du capteur. Si la différence entre l'amplitude du signal d'erreur au bord le plus intérieur et au bord le plus extérieur du disque est supérieure à 10%, ceci signifie que le réseau de diffraction n'est pas réglé à son point optimum. Dans ce cas, recommencer le réglage.
5. Replacer le capteur plus ou moins à mi-chemin sur le disque par la touche TRACK/MANUAL SEARCH REV |◀◀ / ◀◀, appuyer sur la touche PAUSE ▮▮ et vérifier que le numéro de piste et la durée écoulée sont affichés sur le panneau avant. Si ces paramètres n'apparaissent pas ce moment, ou que la durée écoulée change de manière irrégulière, vérifier le point zéro et recommencer le réglage du réseau de diffraction.

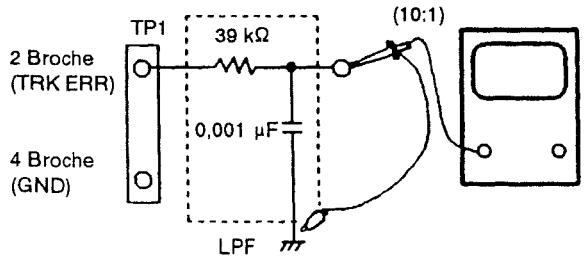
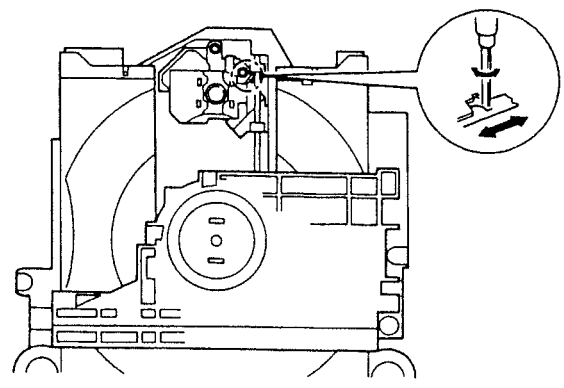


Figure 2



Emplacement des Réglages

[Repérage du point zéro]

Quand le tournevis est introduit dans la fente de réglage du réseau de diffraction et que l'angle du réseau de diffraction est modifié, l'amplitude du signal d'erreur d'alignement à TP1, broche 2, change. Dans les limites de la plage du réseau de diffraction, il existe six emplacements où l'amplitude de l'onde atteint le minimum. Mais l'enveloppe de la forme d'onde n'est régulière qu'à un seul de ces emplacements. Ce point se situe à l'endroit où les trois rayons laser, divisés par le réseau de diffraction, se situent exactement sur la même piste (voir Figure 3).
Ce point s'appelle le point zéro. Lors du réglage du réseau de diffraction, ce point zéro est repéré et utilisé comme position de référence.

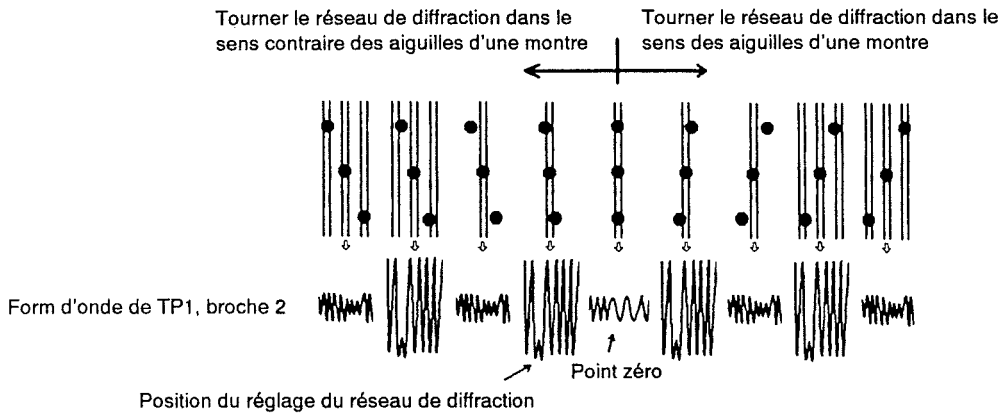
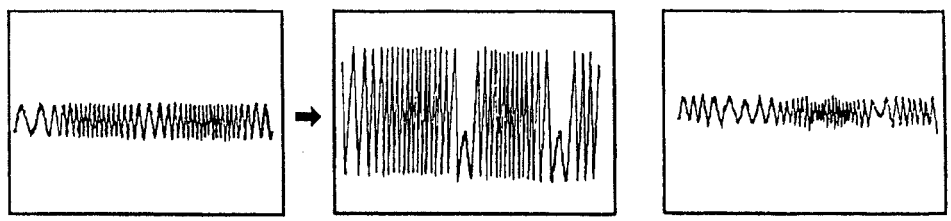


Figure 3



Forme d'onde du point zéro

Forme d'onde d'amplitude maximum

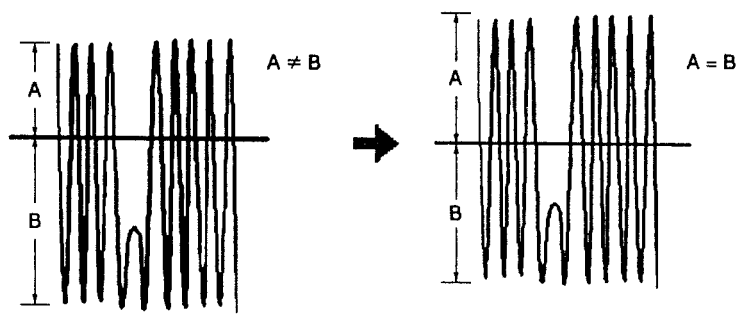
Forme d'onde autre que du point zéro

3. Réglage d'équilibrage d'erreur d'alignement

● Objectif	Pour corriger la variation de sensibilité de la photodiode d'alignement		
● Symptôme quand déréglé	La lecture ne commence pas, la recherche de piste est impossible.		
● Raccordement des instruments de mesure	Raccorder l'oscilloscope à TP1, broche 2 (TRK ERR). Cette connexion peut être faite par l'intermédiaire d'un filtre passe-bas.	● Etat du lecteur	Mode d'essai, circuits servo de la mise au point et de la rotation fermés, circuit servo de l'alignement ouvert
	[Réglages] 50 mV/division 5 ms/division mode CC	● Emplacement du réglage	VR102 (TRK BAL)
		● Disque	YEDS-7

[Marche à suivre]

1. Déplacer le capteur à mi-chemin sur le disque (R = 35 mm) par la touche TRACK/MANUAL SEARCH FWD ▶▶ / ▶▶| ou la touche REV |◀◀ / ◀◀
2. Appuyer sur la touche PGM (PROGRAM), puis sur la touche PLAY ▶, dans cet ordre, pour fermer le circuit servo de la mise au point, puis celui de la rotation.
3. Aligner la ligne lumineuse (masse) au centre de l'écran de l'oscilloscope et placer celui-ci en mode CC.
4. Ajuster VR102 (TRK BAL) de façon que l'amplitude positive et l'amplitude négative du signal d'erreur d'alignement à TP1, broche 2 (TRK ERR) soient identiques (c'est-à-dire, qu'il n'y ait aucun composant CC).



S'il y a un composant CC　　S'il n'y a pas de composant CC

4. Réglage d'inclinaison radiale/tangentielle du capteur

● Objectif	Pour régler l'angle du capteur par rapport au disque, de façon que les rayons laser frappent verticalement le disque et permettre ainsi la lecture optimum des signaux RF.		
● Symptôme quand déréglé	Son interrompu; certains disques peuvent être lus et pas d'autres.		
● Raccordement des instruments de mesure	Raccorder l'oscilloscope à TP1, broche 1 (RF). [Réglages] 20 mV/division 200 ns/division mode CA	● Etat du lecteur	Mode d'essai, lecture
		● Emplacement du réglage	Vis de réglage d'inclinaison radiale Vis de réglage d'inclinaison tangentielle
		● Disque	Disque de 12 cm. (Il est impossible d'employer le disque YEDS-7).

[Marche à suivre]

1. Déplacer le capteur sur le bord externe du disque par la touche TRACK/MANUAL SEARCH FWD▶▶ /▶▶| ou la touche REV|◀◀ /◀◀, de façon que les vis de réglage d'inclinaison radiale et tangentielle puissent être réglées.

   Appuyer sur la touche PGM (PROGRAM) , PLAY ▶ et PAUSE ▮▮ dans cet ordre, pour fermer les circuits servo respectifs et mettre le lecteur en mode de lecture.

2. D'abord, ajuster la vis d'inclinaison radiale six pans droite (L-forme, dimension: 1,5 mm), de façon que le motif en oeil (c'est-à-dire, le diamant au centre du signal RF) soit le plus clairement visible.

3. Ensuite, ajuster la vis d'inclinaison tangentielle six pans droite (L-forme, dimension: 1,5 mm), de façon que le motif en oeil (c'est-à-dire, le diamant au centre du signal RF) soit le plus clairement visible (Figure 5).

4. Ajuster de nouveau la vis d'inclinaison radiale et la vis d'inclinaison tangentielle de façon que le motif en oeil soit le plus clairement visible. Le cas échéant, régler les deux vis de façon que le motif en oeil soit le plus clairement visible.

5. Lorsque le réglage est terminé, bloquer les vis de réglage radiale et tangentielle.

   Remarque: "Radial" et "tangentiel" se rapportent aux sens par rapport au disque illustré à la Figure 4.

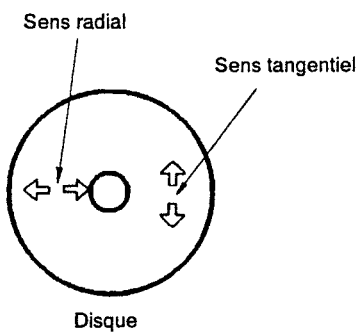
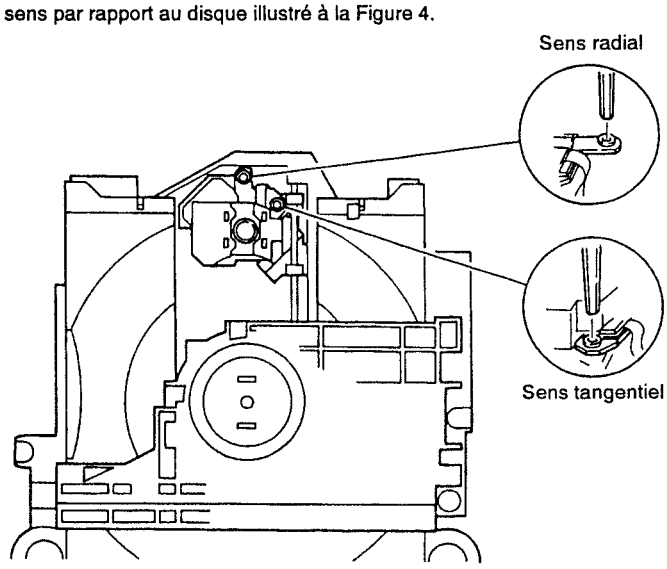


Figure 4



Emplacements des Réglages

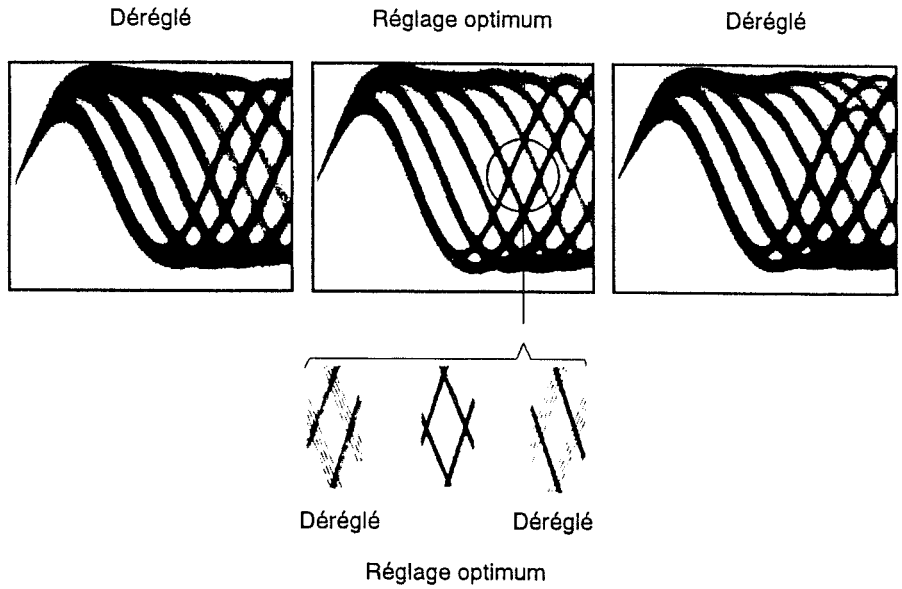


Figure 5 Motif en oeil

5. Réglage du niveau RF (niveau RF)

● Objectif	Pour optimaliser l'amplitude du signal RF de lecture		
● Symptôme quand déréglé	Pas de lecture ni de recherche		
● Raccordement des instruments de mesure	Raccorder l'oscilloscope à TP1, broche 1 (RF)	● Etat du lecteur	Mode d'essai, lecture
	[Rélages] 50 mV/division 10 ms/division mode CA	● Emplacement du réglage	VR1 (alimentation du laser)
		● Disque	YEDS-7

[Marche à suivre]

1. Placer le capteur à mi-chemin sur le disque (R = 35 mm) à l'aide de la touche MANUAL SEARCH FWD ▶▶ ou la touche REV ◀◀. Ensuite, appuyer sur la touche PGM (PROGRAM) la touche PLAY ▶, puis sur la touche PAUSE ▮▮, dans cet ordre, pour fermer les circuits servo respectifs et mettre le lecteur en mode de lecteur.
2. Ajuster VR1 (alimentation du laser) de façon que l'amplitude du signal RF atteigne 1,2 Vc-c ± 0,1V.

6. Réglage de gain de boucle asservie de la mise au point

● Objectif ● Symptôme quand déréglé	Pour optimaliser le gain de la boucle d'asservissement de la mise au point. La lecture ne commence pas ou l'actuateur de la mise au point est parasité.		
● Raccordement des instruments de mesure	Voir Figure 6 [Réglages] CAN. 1 CAN. 2 20 mV/division 5 mV/division Mode X-Y	● Etat du lecteur ● Emplacement du réglage ● Disque	Mode d'essai, lecture VR152 (FCS GAN) YEDS-7

[Marche à suivre]

1. Régler la sortie du générateur AF sur 1,2 kHz et 1 Vc-c.
2. Appuyer sur la touche TRACK/MANUAL SEARCH FWD ▶▶ /▶▶| ou la touche REV |◀◀ /◀◀ pour placer le capteur à mi-chemin sur le disque (R = 35 mm). Ensuite, appuyer sur la touche PGM (PROGRAM), la touche PLAY ▶, puis sur la touche PAUSE ❚❚, dans cet ordre, pour fermer les circuits servo respectifs et placer le lecteur en mode de lecture.
3. Ajuster VR152 (FSC GAN) de façon que la forme d'onde de Lissajous soit symétrique aux alentours de l'axe X et l'axe Y.

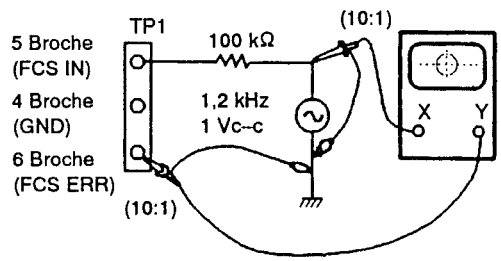
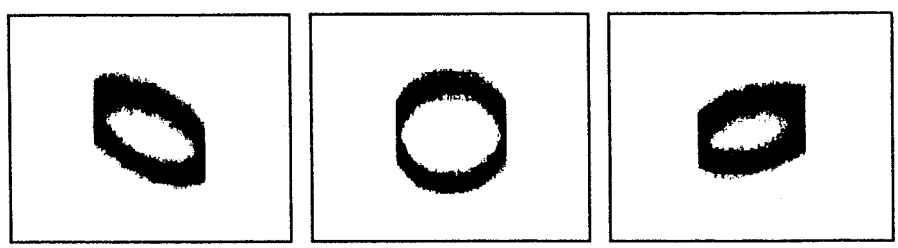


Figure 6

Adjustment de gain de mise au point



Gain supérieur | Gain optimum | Gain inférieur

7. Réglage de gain de boucle asservie de l'alignement

● Objectif	Pour optimaliser le gain de la boucle d'asservissement de l'alignement.		
● Symptôme quand déréglé	La lecture ne commence pas, l'actuateur est parasité pendant la recherche, ou des pistes sont sautées.		
● Raccordement des instruments de mesure	Voir Figure 7 [Réglages] CAN. 1 CAN. 2 50 mV/division 20 mV/division Mode X-Y	● Etat du lecteur ● Emplacement du réglage ● Disque	Mode d'essai, lecture VR151 (TRK GAN) YEDS-7

[Marche à suivre]

1. Régler la sortie du générateur AF sur 1,2 kHz et 1 Vc-c.
2. Appuyer sur la touche TRACK/MANUAL SEARCH FWD ▶▶ /▶▶| ou la touche REV |◀◀ /◀◀ pour placer le capteur à mi-chemin sur le disque (R = 35 mm). Ensuite, appuyer sur la touche PGM (PROGRAM), la touche PLAY ▶, puis sur la touche PAUSE ▮▮, dans cet ordre, pour fermer les circuits servo respectifs et placer le lecteur en mode de lecture.
3. Ajuster VR151 (TRK GAN) de façon que la forme d'onde de Lissajous soit symétrique aux alentours de l'axe X et l'axe Y.

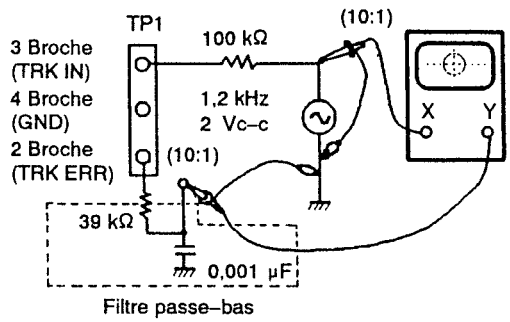
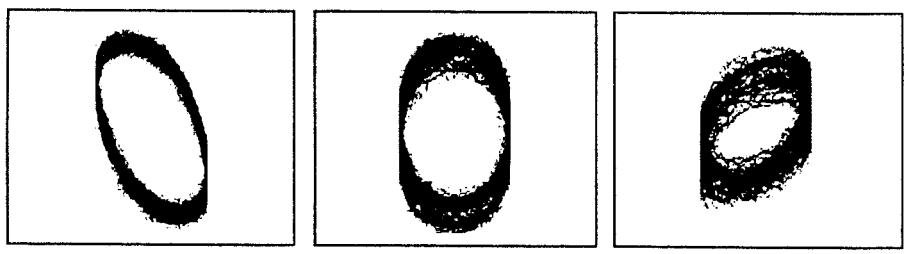


Figure 7

Adjustment de gain d'alignement



Gain supérieur | Gain optimum | Gain inférieur

8. Vérification du signal d'erreur de la mise au point

● Objectif ● Symptôme quand déréglé	Pour juger si le capteur est bon ou pas, en observant le signal d'erreur de la mise au point. L'état du capteur s'évalue à partir de l'amplitude du signal d'erreur d'alignement (comme décrit dans le paragraphe relatif à l'équilibrage d'erreur d'alignement), ainsi qu'à partir de la forme d'onde du signal d'erreur de mise au point.		
● Raccordement des instruments de mesure	Raccorder l'oscilloscope à TP1, broche 6 (FCS ERR). [Réglages] 100 mV/division 5 ms/division mode CC	● Etat du lecteur ● Emplacement du réglage ● Disque	Mode de test, arrêt Aucun YEDS-7

[Marche à suivre]

1. Raccorder TP1, broche 5 à la masse.
2. Installer le disque.
3. Tout en regardant l'écran de l'oscilloscope, appuyer sur la touche PGM (PROGRAM) et observer la forme d'onde de la Figure 8, pendant quelques instants.Vérifier que l'amplitude atteint au moins 2,5 Vc-c et que les amplitudes positive et négatives soient égales. Comme la forme ne sort que pour un moment, quand la touche PGM (PROGRAM) est enclenchée, appuyer sur à plusieurs reprises sur cette touche, jusqu'à ce que la forme d'onde ait été vérifiée.

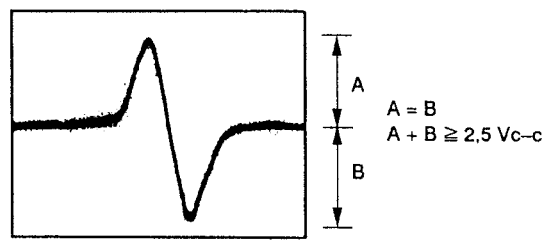


Figure 8

[Evaluation du capteur]

Ne pas tenter d'évaluer l'état du capteur tant que tous les réglages ne sont pas corrects. Les cas suivants témoignent de l'anomalie du capteur.

1. L'amplitude du signal d'erreur d'alignement est extrêmement petite (inférieure à 2 Vc-c).
2. L'amplitude du signal d'erreur de mise au point est extrêmement petite (inférieure à 2,5 Vc-c).
3. Les amplitudes positive et négative du signal d'erreur de mise au point sont extrêmement asymétriques (taux 2:1 ou plus).
4. Le signal RF est trop petit (inférieur à 0,8 Vc-c) et même si VR1 (alimentation du laser) est ajustée, le signal RF ne peut être élevé au niveau standard.

8. AJUSTES

1. Métodos de ajuste

Si un reproductor de discos compactos se ajusta incorrecta o inadecuadamente, puede funcionar mal o no trabajar incluso aunque no exista ningún problema en el captor ni en los circuitos. Ajuste correctamente siguiendo el procedimiento de ajuste.

1-1 Ítemes de ajuste/verificación y orden

Paso	Ítem	Punto de prueba	Lugar de ajuste
1	Ajuste del descentramiento de enfoque	TP1, Patilla 6 (FCS. ERR)	VR103 (FCS. OFS)
2	Ajuste de retícula	TP1, Patilla 2 (TRK. ERR)	Ranura de ajuste de retícula
3	Ajuste del equilibrio de ajuste de seguimiento	TP1, Patilla 2 (TRK. ERR)	VR102 (TRK. BAL)
4	Ajuste de la inclinación en sentido radial/tangencial del captor	TP1, Patilla 1 (RF)	Tornillo de ajuste de la inclinación radial Tornillo de ajuste de la inclinación tangencial
5	Ajuste del nivel de RF	TP1, Patilla 1 (RF)	VR1 (Nivel de RF)
6	Ajuste de la ganancia del bucle del servo de enfoque	TP1, Patilla 5 (FCS. IN) TP1, Patilla 6 (FCS. ERR)	VR152 (FCS. GAN)
7	Ajuste de la ganancia del bucle del servo de seguimiento	TP1, Patilla 3 (TRK. IN) TP1, Patilla 2 (TRK. ERR)	VR151 (TRK. GAN)
8	Verificación de la señal de error de enfoque	TP1, Patilla 6 (FCS. ERR)	———

● **Tabla de abreviaturas**

FCS ERR : Error de enfoque
FCS OFS : Descentramiento de enfoque
TRK ERR : Error de seguimiento
TRK BAL : Equilibrio de seguimiento
FCS GAN : Ganacia de enfoque
TRK GAN : Ganacia de seguimiento
FCS IN : Entrada de enfoque
TRK IN : Entrada de seguimiento

1-2 Instrumentos y herramientas de medición

1. Osciloscopio de doble traza (Sonda de 10:1)
2. Oscilador de baja frecuencia
3. Disco de prueba (YEDS-7)
4. Disco de 12 cm (con 70 minutos de grabación por lo menos)
5. Filtro de paso bajo (39 kΩ + 0,001 μF)
6. Resistor (100 kΩ)
7. Llave hexagonal recta (en forma de "L", tamaño: 1,5 mm)
8. Herramientas estándar

1-3 Ubicación de los puntos de prueba y los resistores variables de ajuste

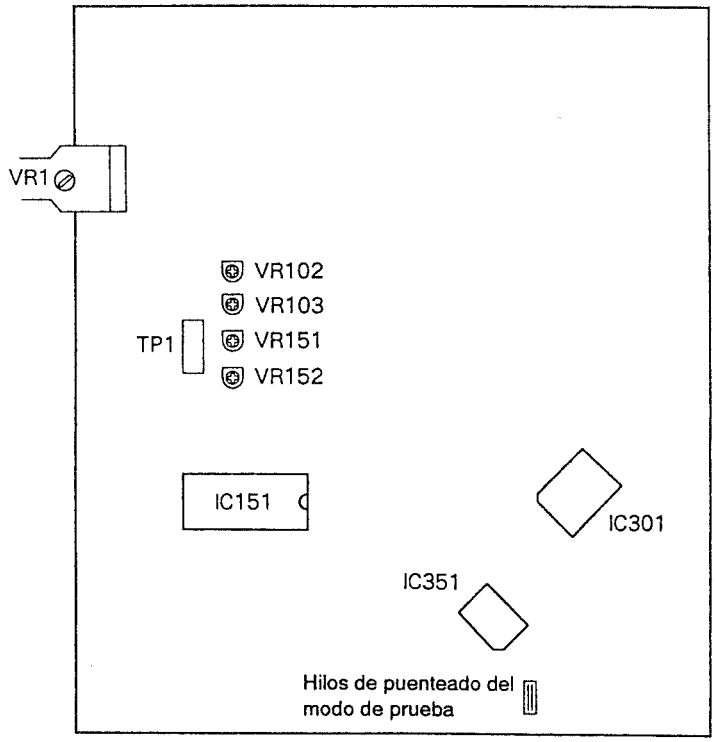


Figure 1 Lugares le Ajuste

1-4 Notas

1. Emplee una sonda de 10:1 para el osciloscopio.
2. Todas las posiciones de los mandos (ajustes) para el osciloscopio de los procedimientos de ajuste son para cuando se emplee la sonda de 10:1.

1-5 Modo de prueba

Estos modelos poseen un modo de prueba que permite realizar fácilmente los ajustes y las comprobaciones requeridos para el servicio. Cuando estos modelos estén en el modo de prueba, las teclas del panel frontal trabajarán de forma diferente a la normal. Los ajustes y las comprobaciones podrán realizarse accionando estas teclas de acuerdo con el procedimiento correcto. Para estos modelos, todos los ajustes se realizarán en el modo de prueba.

[Puesta de estos modelos en el modo de prueba]

A continuación se indica cómo poner estos modelos en el modo de prueba.
1. Desenchufe el cable de alimentación de la toma de CA.
2. Cortocircuite los hilos de puenteado de modo de prueba. (Consulte la figura 1.)
3. Enchufe el cable de alimentación de la toma de CA.

Cuando haya ajustado correctamente el modo de prueba, la visualización será diferente a la obtenida normalmente al conectar la alimentación. Si la visualización sigue siendo la normal, el modo de prueba no se habrá ajustado normalmente, por lo que tendrá que repetir los pasos 1 a 3.

[Desactivación del modo de prueba]

A continuación se indica el procedimiento para desactivar el modo de prueba.

1. Presione la tecla STOP y cese todas las operaciones.
2. Desenchufe el cable de alimentación de la toma de CA.

[Operaciones de teclas en el modo de prueba]

Código	Nombre de la tecla	Función en el modo de prueba	Explicación
	PGM (PROGRAM)	Cierre del servo de enfoque	Si la bandeja de disco 1 está cerrada, ésta se moverá hasta la posición de reproducción. Después el diodo láser se encenderá y el actuador de enfoque descenderá, después se elevará lentamente, y el servo de enfoque se cerrará en el punto en el que el objetivo se enfoque sobre el disco. Con el reproductor en este estado, si gira ligeramente con la mano el disco parado podrá oír el sonido del servo de enfoque. Si puede oír este sonido, el servo de enfoque estará funcionando correctamente. Si presiona esta tecla sin disco montado, el diodo láser se encenderá, el actuador de enfoque se verá empujado hacia abajo, y después se levantará y descenderá dos veces, y volverá a su posición original.
►	PLAY	Activación del servo del eje	Pondrá en marcha el motor del eje haciéndolo girar hacia la derecha y después la rotación del disco alcanzará la velocidad prescrita (unas 500 rpm en la periferia interior), y pondrá el servo del eje en un bucle cerrado. Tenga cuidado. Si presiona esta tecla cuando no haya disco montado, el motor del eje girará a la velocidad máxima. Si el servo de enfoque no pasa correctamente a un bucle cerrado, o si el haz lasérico incide en la sección del espejo en el la periferia del disco, ocurrirá el mismo síntoma.
❚❚	PAUSE	Apertura/cierre del servo de seguimiento	Si presiona esta tecla cuando el servo de enfoque y el servo del eje están funcionando correctamente en bucles cerrados, el servo de sequimiento se pondrá en bucle cerrado, en el panel frontal se visualizarán el número de canción que esté reproduciéndose y el tiempo transcurrido, y se producirá la salida de la señal de reproducción. Si el tiempo transcurrido no se visualiza o no se cuenta correctamente, o si el sonido no se reproduce correctamente, es posible que el rayo lasérico esté incidiendo en la sección sin sonido grabado en el borde exterior del disco, o que exista algún otro problema. Esta tecla es basculante (de acción alternativa) y abre/cierra el servo de seguimiento alternativamente. Esta tecla no funcionará cuando no haya disco montado.
⏮/ ◄◄	TRACK/ MANUAL SEARCH REV	Retroceso del carro (hacia adentro)	Moverá la posición del captor hacia el diámetro interior del disco. Si presiona esta tecla con el servo de seguimiento en bucle cerrado, dicho bucle pasará automáticamente a bucle abierto. Como el captor no se para automáticamente en el punto final mecánico en el modo de prueba, tenga cuidado cuando realice esta operación.
►►/ ⏭	TRACK/ MANUAL SEARCH FWD	Avance del carro (hacia afuera)	Moverá la posición del captor hacia la periferia del disco. Si presiona esta tecla con el servo de seguimiento en bucle cerrado, dicho bucle pasará automáticamente a bucle abierto. Como el captor no se para automáticamente en el punto final mecánico en el modo de prueba, tenga cuidado cuando realice esta operación.
■	STOP	Parada	Desactivará todos los servos e inicializará la unidad. El captor permanecerá donde estaba cuando se presionó esta tecla.
▲	OPEN/CLOSE DISC1	Apertura/cierre de la bandeja del disco	Abrirá/cerrará la bandeja del disco. Esta tecla es basculante (de acción alternativa) y abre/cierra la bandeja alternativamente.

[Cómo reproducir un disco en el modo de prueba]

En el modo de prueba, como los servos funcionan independientemente, la reproducción de un disco requiere el que usted emplee las teclas en el orden correcto para cerrar los servos.
A continuación se indica la secuencia de operación de teclas para reproducir un disco en el modo de prueba.

PGM (PROGRAM)	Hará que se encienda el diodo láser y cerrará el servo de enfoque.
⇓	
PLAY ▶	Pondrá en marcha el motor del eje y hará que se cierre el servo del eje.
⇓	
PAUSE ▮▮	Cerrará el servo de seguimiento.

Espere de 2 a 3 segundos por lo menos entre cada una de estas operaciones.

1. Ajuste del descentramiento del enfoque

● Objetivo ● Síntomas en caso de desajuste	Ajuste de la tensión de CC para el amplificador de error de enfoque. El reproductor no enfoca y la señal de RF contiene perturbaciones.		
● Conexión de los instrumentos de medición	Conecte el osciloscopio a TP1, patilla 6, (FCS ERR). [Ajustes] 5 mV/división 10 ms/división modo de CC	● Estado del reproductor ● Lugar de ajuste ● Disco	Modo de prueba, parado (con el interruptor de alimentación en ON) VR103 (FCS OFS) No es necesario

[Procedimiento]

Ajuste VR103 (FCS OFS) de forma que la tensión de CC de TP1, patilla 6, (FCS ERR) sea de −150 ± 50 mV.

2. Ajuste de retícula

● Objetivo	Alineación de los puntos del haz lasérico de generación de error de seguimiento al ángulo óptimo en la pista		
● Síntomas en caso de desajuste	La reproducción no se inicia, la búsqueda de canciones es imposible, las pistas se saltan.		
● Conexión de los instrumentos de medición	Conecte el osciloscopio a TP1, patilla 2, (TRK ERR) a través de un filtro de paso bajo. (Consulte la figura 2) [Ajustes] 50 mV/división 5 ms/división modo de CC	● Estado del reproductor ● Lugar de ajuste ● Disco	Modo de prueba, servos de enfoque y del eje cerrados, y servo de seguimiento abierto Ranura de ajuste de retícula del captor Disco de 12 cm. (El disco YEDS-7 no podrá emplearse.)

[Procedimiento]

1. Mueva el captor hasta el borde exterior del disco con la tecla TRACK/MANUAL SEARCH FWD ▶▶ / ▶▶| o la tecla REV |◀◀ / ◀◀, de forma que la ranura de ajuste de la retícula quede en el borde exterior del disco, donde puede ajustarse.
2. Presione la tecla PGM (PROGRAM), y después la tecla PLAY ▶, por este orden, a fin de cerrar el servo de enfoque y después el servo del eje.
3. Inserte un destornillador normal en la ranura de ajuste de la retícula y ajuste la retícula hasta encontrar el punto nulo.
   Para más detalles, consulte la página siguiente.
4. Si gira lentamente el destornillador hacia la izquierda desde el punto nulo, la amplitud de la onda aumentará gradualmente. Después, si continúa girando el destornillador, la amplitud de la onda se volverá otra vez más pequeña. Gire el destornillador hacia la izquierda desde el punto nulo y ajuste la retícula al primer punto en el que la amplitud de la onda alcance su valor máximo.

   Referencia: En la figura 3 se muestra la relación entre el ángulo del haz de seguimiento con la pista y la forma de onda.

   Nota: La amplitud de la señal de error de seguimiento será de aproximadamente 3 Vp-p (cuando se emplee un filtro de paso bajo de 39 kΩ , 0,001 μF). Si esta amplitud es extremadamente pequeña (2 Vp-p o menos), la causa será el funcionamiento malo en el lente objetivo o en el captador. Si la diferencia entre la amplitud de la señal de error en el borde interior y exterior del disco es superior al 10%, la retícula no estará ajustada al punto óptimo, por lo que tendrá que volver
5. Devuelva el captor hasta la mitad más o menos del disco con la tecla TRACK/MANUAL SEARCH REV |◀◀ / ◀◀, presione la tecla PAUSE ▮▮, y vuelva a comprobar si en el panel frontal se visualizan el número de canción y el tiempo transcurrido. Si no se visualizan esta vez, o si el tiempo transcurrido cambia irregularmente, vuelva a comprobar el punto nulo y ajuste otra vez la retícula.

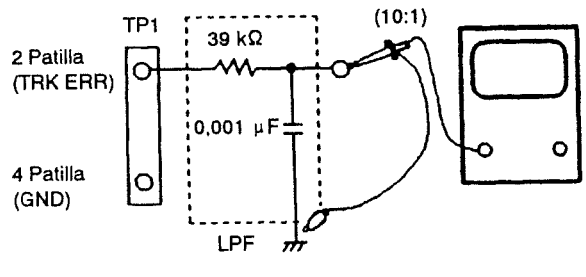
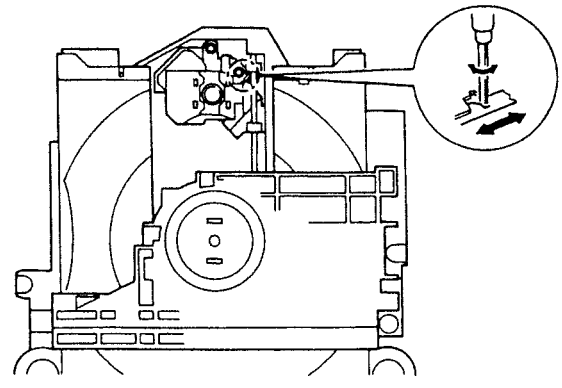


Figura 2



Lugares de Ajuste

[Cómo encontrar el punto nulo]

Cuando inserte el destornillador normal en la ranura para el ajuste de la retícula y cambie el ángulo de la misma. La amplitud de la señal de error de seguimiento de TP1, patilla 2, cambiará. Dentro del margen para la retícula existen cinco o seis lugares en los que la amplitud alcanza el valor mínimo. De estos cinco o seis lugares, solamente hay uno en el que la envolvente de la forma de onda es uniforme. Este lugar es donde los tres haces lasércicos divididos por la retícula se encuentran exactamente sobre la misma pista. (Consulte la figura 3.) Este punto se denomina punto nulo. Cuando ajuste la retícula, este punto se encontrará y empleará como posición de referencia.

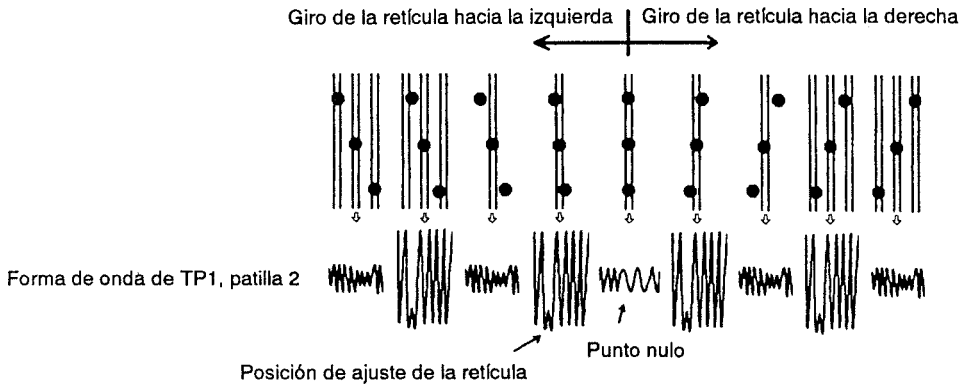
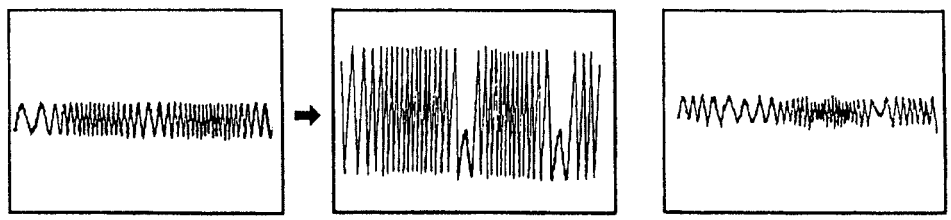


Figura 3



Forma de onda del punto nulo

Forma de onda de amplitud máxima

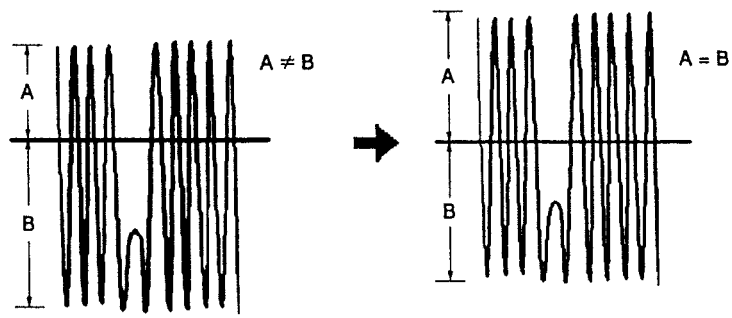
Forma de onda que no es el punto nulo

3. Ajuste del equilibrio de error de seguimiento

● Objetivo	Corrección de la variación de la sensibilidad del fotodiodo de seguimiento		
● Síntomas en caso de desajuste	La reproducción no se inicia o la búsqueda de canciones es imposible.		
● Conexión de los instrumentos de medición	Conecte el osciloscopio a TP1, patilla 2, (TRK ERR). Esta conexión puede realizarse a través de un filtro de paso bajo. [Ajustes] 50 mV/división 5 ms/división modo de CC	● Estado del reproductor ● Lugar de ajuste ● Disco	Modo de prueba, servos de enfoque y del eje cerrados, y servo de seguimiento abierto VR102 (TRK BAL) YEDS-7

[Procedimiento]

1. Mueva el captor hasta la mitad del disco (R = 35 mm) con la tecla TRACK/MANUAL SEARCH FWD ▶▶ / ▶▶| o la tecla REV |◀◀ / ◀◀.
2. Presione la tecla PGM (PROGRAM), y después la tecla PLAY ▶, por este orden, a fin de cerrar el servo de enfoque y después el servo del eje.
3. Haga coincidir la línea brillante (masa) del centro de la pantalla del osciloscopio y ponga éste en el modo de CC.
4. Ajuste VR102 (TRK BAL) de forma que la amplitud positiva y la negativa de la señal de error de seguimiento de TP1, patilla 2, (TRK ERR) sean iguales (en otras palabras, de forma que no haya componente de CC).



Cuando hay componente de CC

Cuando no hay componente de CC

4. Ajuste de la inclinación en sentido radial/tangencial del captor

● Objetivo	Ajustar el ángulo del captor en relación con el disco de forma que los haces laséricos incidan perpendicularmente sobre el mismo a fin de poder leer con la mayor exactitud las señales de RF.		
● Síntomas en caso de desajuste	Sonido quebrado, algunos discos pueden reproducirse pero otros no.		
● Conexión de los instrumentos de medición	Conecte el osciloscopio a TP1, patilla 1, (RF). [Ajustes] 20 mV/división 200 ns/división modo de CA	● Estado del reproductor ● Lugar de ajuste ● Disco	Modo de prueba, reproducción Tornillo de ajuste de la inclinación radial y tornillo de ajuste de la inclinación tangencial Disco de 12 cm. (El disco YEDS-7 no podrá emplearse.)

[Procedimiento]

1. Mueva el captor hasta el borde exterior del disco con la tecla TRACK/MANUAL SEARCH FWD ▶▶ / ▶▶| o la tecla REV |◀◀ / ◀◀, de forma que puedan ajustarse los tornillos de inclinación radial/tangencial.
   Presione la tecla PGM (PROGRAM), la tecla PLAY ▶, y después la tecla PAUSE ❚❚, por este orden, a fin de cerrar los servos rispectivos, y ponga el reproductor en el modo de reproducción.
2. En primer lugar, gire el tornillo de ajuste de inclinación radial con una llave hexagonal recta (en forma de "L", tamaño: 1,5 mm) hasta que el patrón ocular (la forma de diamante del centro de la señal de RF) pueda verse con la mayor claridad.
3. A continuación, ajuste el tornillo de ajuste de inclinación tangencial con una llave hexagonal recta (en forma de "L", tamaño: 1,5 mm) hasta que el patrón ocular (la forma de diamante del centro de la señal de RF) pueda verse con la mayor claridad (figura 5).
4. Vuelva a girar el tornillo de ajuste de inclinación radial y el tornillo de inclinación tangencial hasta que el patrón ocular pueda verse con la mayor claridad. Si es necesario, ajuste alternativamente los dos tornillos hasta que el patrón ocular pueda verse con la mayor claridad.
5. Cuando se completa el ajuste, fije los tornillos para el ajuste radial y tangencial.

Nota: Radial y tangencial significan las direcciones en relación con el disco mostrado en la figura 4.

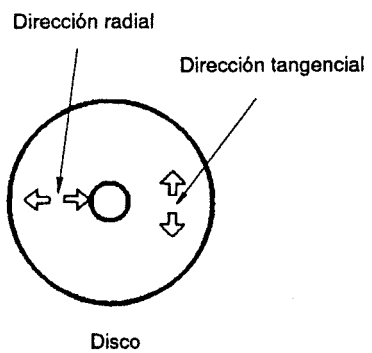
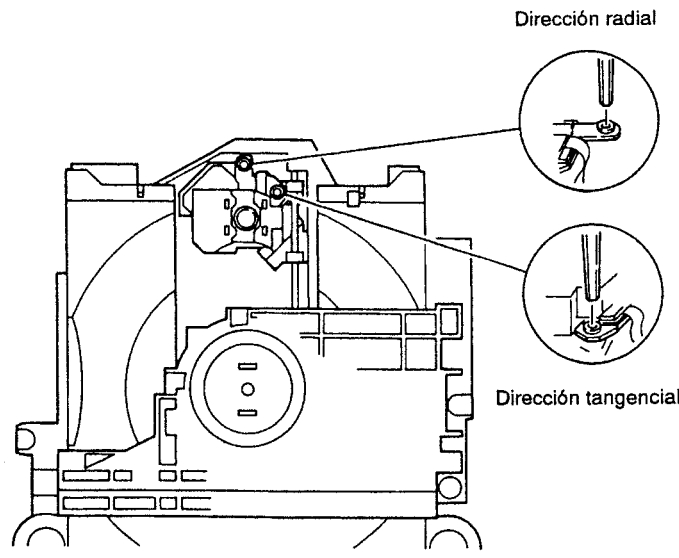


Figura 4



Lugares de Ajuste

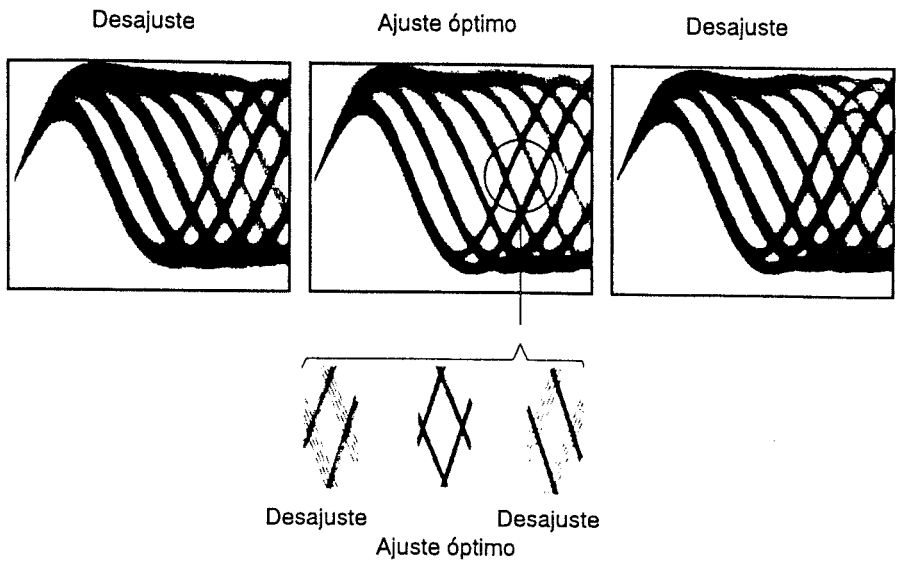


Figura 5 Patron Optico

5. Ajuste del nivel de RF

● Objetivo ● Síntomas en caso de desajuste	Optimización de la amplitud de la señal de RF de reproducción La reproducción no se inicia o la búsqueda de canciones es imposible.		
● Conexión de los instrumentos de medición	Conecte el osciloscopio a TP1, patilla 1, (RF). [Ajustes] 50 mV/división 10 ms/división modo de CA	● Estado del reproductor ● Lugar de ajuste ● Disco	Modo de prueba, reproducción VR1 (potencia de láser) YEDS-7

[Procedimiento]

1. Mueva el captor hasta la mitad del disco (R = 35 mm) con la tecla MANUAL SEARCH FWD ▶▶ o la tecla REV ◀◀, presione la tecla PGM (PROGRAM), la tecla PLAY ▶, y después la tecla PAUSE ❚❚, por este orden a fin de cerrar los servos respectivos, y ponga el reproductor en el mode de reproducción.
2. Ajuste VR1 (potencia de láser) de forma que la amplitud de la señal de RF sea de 1,2 Vp-p ± 0,1 V.

6. Ajuste de la ganancia del bucle del servo de enfoque

● Objetivo	Optimización de la ganancia del bucle del servo de enfoque		
● Síntomas en caso de desajuste	La reproducción no se inicia o el actuador de enfoque produce ruido.		
● Conexión de los instrumentos de medición	Consulte la figura 6. [Ajustes] CH1 CH2 20 mV/división 5 mV/división Modo X-Y	● Estado del reproductor ● Lugar de ajuste ● Disco	Modo de prueba, reproducción VR152 (FCS GAN) YEDS-7

[Procedimiento]

1. Ajuste la salida del generador de AF a 1,2 kHz y 1 Vp-p.
2. Presione la tecla TRACK/MANUAL SEARCH FWD ▶▶ /▶▶| o la tecla REV |◀◀ /◀◀ para mover el captor hasta la mitad del disco (R = 35 mm), y después presione la tecla PGM (PROGRAM), la tecla PLAY ▶, y después la tecla PAUSE ❚❚, por este orden, a fin de cerrar los servos correspondientes y poner el reproductor en el modo de reproducción.
3. Ajuste VR152 (FCS GAN) hasta que la forma de onda de Lissajous sea simétrica alrededor del eje X y el eje Y.

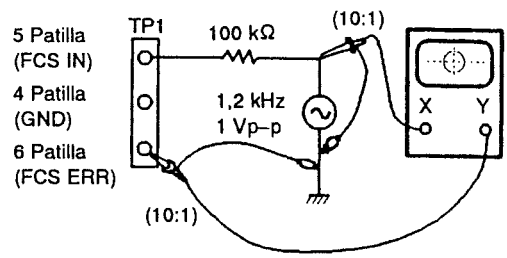
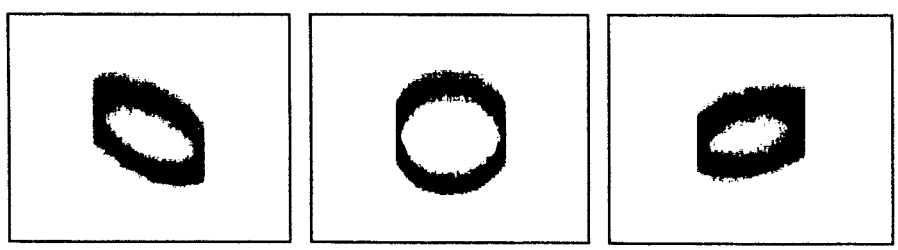


Figura 6

Ajuste de la ganancia de enfoque



Ganancia superior Ganancia óptima Ganancia inferior

7. Ajuste de la ganancia del bucle del servo de seguimiento

● Objetivo	Optimización de la ganancia del bucle del servo de seguimiento		
● Síntomas en caso de desajuste	La reproducción no se inicia, el actuador de enfoque produce ruido, o se saltan pistas.		
● Conexión de los instrumentos de medición	Consulte la figura 7. [Ajustes] CH1 CH2 50 mV/división 20 mV/división Modo X-Y	● Estado del reproductor ● Lugar de ajuste ● Disco	Modo de prueba, reproducción VR151 (TRK GAN) YEDS-7

[Procedimiento]

1. Ajuste la salida del generador de AF a 1,2 kHz y 1 Vp-p.
2. Presione la tecla TRACK/MANUAL SEARCH FWD ▶▶ /▶▶| o la tecla REV |◀◀ /◀◀ para mover el captor hasta la mitad del disco (R = 35 mm), y después presione la tecla PGM (PROGRAM), la tecla PLAY ▶, y la tecla PAUSE ▮▮, por este orden, a fin de cerrar los servos respectivos y poner el reproductor en el modo de reproducción.
3. Ajuste VR151 (TRK GAN) hasta que la forma de onda de Lissajous sea simétrica alrededor del eje X y el eje Y.

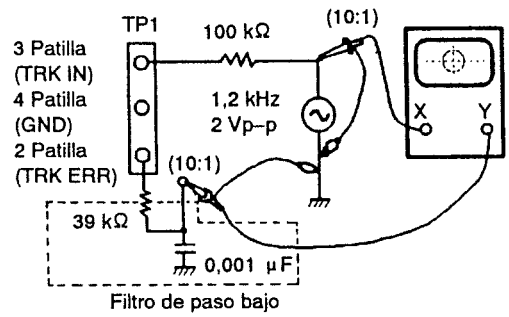
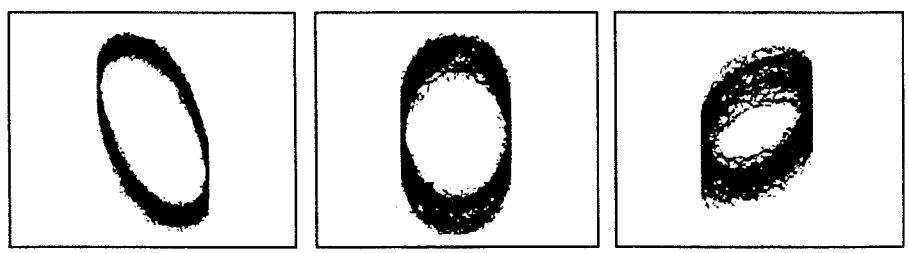


Figura 7

Ajuste de la ganancia de seguimiento



Ganancia superior | Ganancia óptima | Ganancia inferior

8. Verificación de la señal de error de enfoque (curva S de enfoque)

● Objetivo ● Síntomas en caso de desajuste	Juzgar si el captor est'a bien o no observando la señal de error de enfoque. El captor se juzga por la amplitud de la señal de error de seguimiento (como se ha indicado en la sección sobre el ajuste del equilibrio de error de seguimiento) y la forma de onda de la señal de error de enfoque.		
● Conexión de los instrumentos de medición	Conecte el osciloscopio a TP1, patilla 6, (FCS ERR). [Ajustes] 100 mV/división 5 ms/división modo de CC	● Estado del reproductor ● Lugar de ajuste ● Disco	Modo de prueba, parada Ninguno YEDS-7

[Procedimiento]

1. Conecte TP1, patilla 5, a masa.
2. Coloque el disco.
3. Contemplando la pantalla del osciloscopio, presione la tecla PGM (PROGRAM) y observe durante un momento la forma de onda de la figura 8. Verifique si la amplitud es de 2,5 Vp-p por lo menos y si la amplitud de las partes positiva y negativa son iguales. Como la forma de onda solamente sale durante un momento cuando se presiona la tecla PGM (PROGRAM), presione una y otra vez esta tecla hasta que logre comprobar la forma de onda.

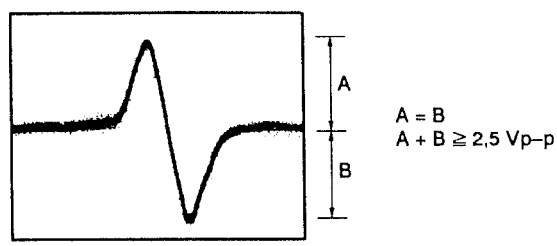


Figura 8

[Juicio sobre el captor]

No juzgue el captor hasta haber finalizado correctamente todos los ajustes. En los casos siguientes es posible que haya algo erróneo en el captor.

1. La amplitud de la señal de error de seguimiento es extremadamente pequeña (menos de 2 Vp-p).
2. La amplitud de la señal de error de enfoque es extremadamente pequeña (menos de 2,5 Vp-p).
3. Las amplitudes de las partes positiva y negaiva de la señal de error de enfoque son extremadamente asimétricas (relación de 2:1 o superior).
4. La señal de RF es demasiado pequeña (menos de 0,8 Vp-p) y aunque se ajuste VR1 (potencia de láser), la señal de RF no puede aumentarse hasta el nivel estándar.

9. FOR PD–T510/RD, WPW, WEMXK, PD–T310/RD, WPW AND WEMXK

NOTES:
- Parts marked by "NSP" are generally unavailable because they are not in our Master Spare Parts List.
- The ⚠ mark found on some component parts indicates the importance of the safety factor of the part. Therefore, when replacing, be sure to use parts of identical designation.
- Parts marked by "⊙" are not always kept in stock. Their delivery time may be longer than usual or they may be unavailable.

9.1 CONTRAST OF MISCELLANEOUS PARTS FOR PD–T510/RD, WPW AND WEMXK

PD–T510/RD, WPW, WEMXK and PD–T510/KC have the same construction except for the following:

Mark	Symbol & Description	Part No.				Remarks
		PD–T510/KC	PD–T510/RD	PD–T510/WPW	PD–T510/WEMXK	
⊙	Mother board assembly	PWM1668	PWM1670	PWM1668	PWM1669	
NSP	Mechanism board assembly	PWX1162	PWX1162	PWX1162	PWX1145	
⚠	Strain relief	CM–22	CM–22B	CM–22B	CM–22B	
⚠	AC power cord	PDG1040	PDG1013	PDG1006	PDG1003	
⚠	Power transformer (AC120V)	PTT1237	.....	.....	.....	
⚠	Power transformer (AC110–127/220–240V)	.....	PTT1238	.....	.....	
⚠	Power transformer (AC220–240V)	.....	.....	PTT1236	PTT1236	
	Display window (B)	PAM1590	PAM1590	PAM1590	.....	
	Display window (D)	.....	.....	.....	PAM1582	
NSP	Twin tray mechanism assembly	PXA1344	PXA1344	PXA1344	.....*	
NSP	Rear base	PNA1730	PNA1745	PNA1743	PNA1776	
NSP	Under base	PNA1882	PNA1882	PNA1882	PNA1863	
NSP	Multi–spacer	PEB1027	PEB1027	PEB1027	.....	
	Packing case	PHG1750	PHG1842	PHG1842	PHG1765	
	Connection cord (with mini plug)	PDE–319	.....	PDE–319	.....	
	Operating instructions (English/French)	PRE1153	.....	.....	PRE1153	
	Operating instructions (English)	.....	PRB1161	PRB1161	.....	
	Operating instructions (German/Italian/Dutch/Swedish/Spanish/Portuguese)	.....	.....	.....	PRF1053	

* The assembled twin-tray mechanism assembly has not parts numbers.

MOTHER BOARD ASSEMBLY
PWM1670, PWM1669 and PWM1668 have the same construction except fot the following:

Mark	Symbol & Description	Part No.			Remarks
		PWM1668	PWM1670	PWM1669	
	IC20	TA2019P	M5298P	M5298P	
	iC31	.....	.....	ICP–N10	
	D391–394	1SS254	.....	.....	
	L391 Axial inductor	LAU010K	.....	.....	
	S5 Voltage selector (AC110 – 127V/220 – 240V)	.....	PSB1006	.....	
	C393	CCCSL101J50	.....	.....	
	R391	RD1/6PM244J	.....	.....	
	R392	RD1/6PM102J	.....	.....	
	JA391, 392 Jack	PKN1004	.....	.....	

MECHANISM BOARD ASSEMBLY

Although PWX1145 and PWX1162 are different in part number, they have the same service parts.

9.2 CONTRAST OF MISCELLANEOUS PARTS FOR PD–T310/RD, WPW AND WEMXK

PD–T310/RD, WPW, WEMXK and PD–T310/KC have the same construction except for the following:

Mark	Symbol & Description	Part No.				Remarks
		PD–T310/ KC	PD–T310/ RD	PD–T310/ WPW	PD–T310/ WEMXK	
⊙	Mother board assembly	PWM1665	PWM1667	PWM1665	PWM1666	
⊙	Sub board assembly	PWX1217	PWX1217	PWX1217	PWX1218	
NSP	Headphone board assembly	.....	.....	.....	PWZ2298	
NSP	Mechanism board assembly	PWX1162	PWX1162	PWX1162	PWX1145	
⚠	Strain relief	CM–22	CM–22B	CM–22B	CM–22B	
⚠	AC power cord	PDG1040	PDG1013	PDG1008	PDG1003	
⚠	Power transformer (AC120V)	PTT1237	.....	.....	.....	
⚠	Power transformer (AC110–127/220–240V)	.....	PTT1238	.....	.....	
⚠	Power transformer (AC220–240V)	.....	.....	PTT1236	PTT1236	
	Headphone knob	.....	.....	.....	PAC1370	
	Display window (A)	PAM1589	PAM1589	PAM1589	.....	
	Display window (C)	.....	.....	.....	PAM1549	
	Panel (A)	PNW2196	PNW2196	PNW2196	.....	
	Panel (B)	.....	.....	.....	PNW2198	
	Insulator	.....	.....	.....	PNW1912	
	Foot assembly	PXA1201	PXA1201	PXA1201	.....	
	Function panel assembly	PEA1190	PEA1190	PEA1190	PEA1198	
NSP	Rear base	PNA1729	PNA1742	PNA1741	PNA1774	
NSP	Under base	PNA1882	PNA1882	PNA1882	PNA1863	
NSP	Multi–spacer	PEB1027	PEB1027	PEB1027	.....	
NSP	Twin-tray mechanism assembly	PXA1344	PXA1344	PXA1344	.....	
	Packing case	PHG1749	PHG1841	PHG1841	PHG1764	
	Operating instructions (English/French)	PRE1153	.....	.....	PRE1153	
	Operating instructions (English)	.....	PRB1161	PRB1161	.....	
	Operating instructions (Spanish)	.....	PRC1039	.....	.....	
	Operating instructions (German/Italian/Dutch/Swedish/Spanish/ Portuguese)	.....	.....	.....	PRF1053	

* The assembled twin-tray mechanism assembly has not parts numbers.

LIST OF ASSEMBLIES

SUB BOARD ASSEMBLY (For WEMXK type)
- FUNCTION BOARD ASSEMBLY
- SWITCH BOARD ASSEMBLY
- HEADPHONE BOARD ASSEMBLY

MOTHER BOARD ASSEMBLY

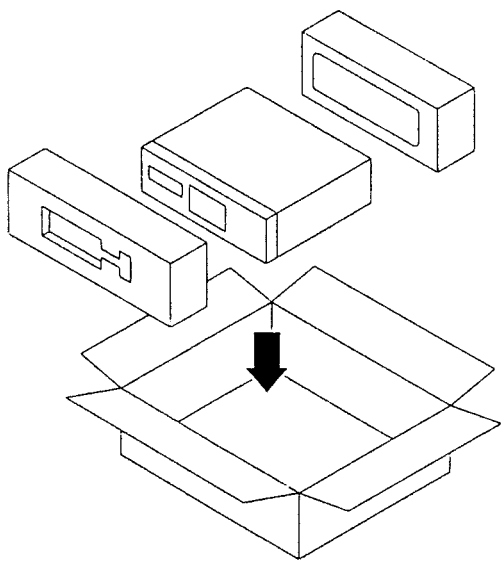
PWM1667, PWM1666 and PWM1665 have the same construction except fot the following:

Mark	Symbol & Description	Part No.			Remarks
		PWM1665	PWM1667	PWM1666	
	IC20	TA2019P	M5298P	M5298P	
	IC31	.....	.....	ICP-N10	
	IC406	.....	.....	BA15218	
	S5 Voltage selector (AC110 – 127V/220V – 240V)	.....	PSB1006	.....	
	R445, 446	RD1/6PM681J	RD1/6PM681J	RD1/6PM271J	
	R447, 448	.....	.....	RD1/6PM471J	
	R470, 471	.....	.....	RD1/6PM470J	

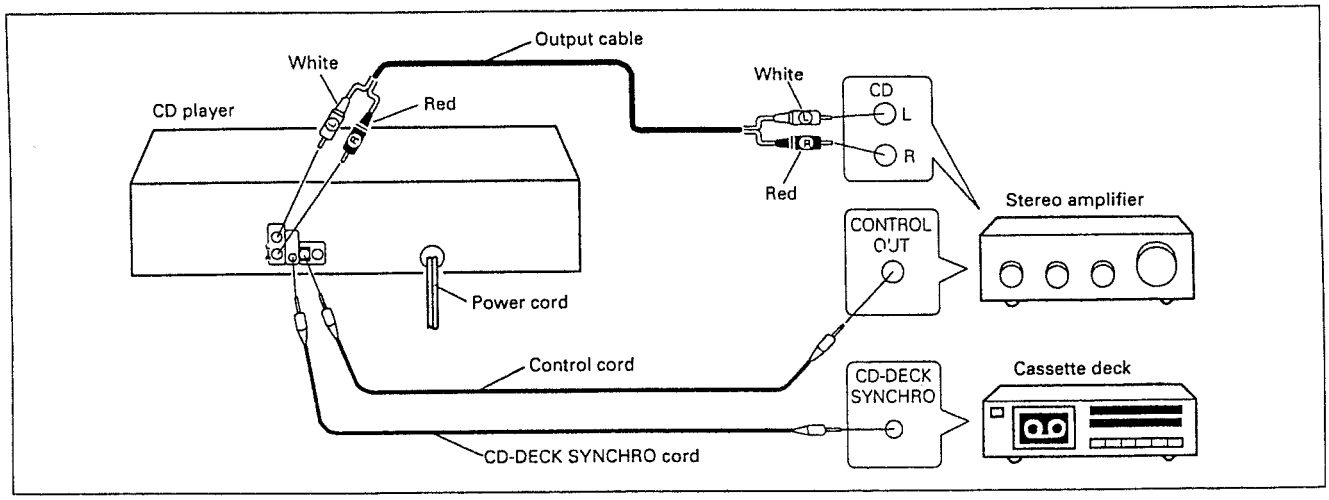
MECHANISM BOARD ASSEMBLY

Although PWX1145 and PWX1162 are different in part number, they have the same service parts.

9.3 PACKING FOR PD–T510/WEMXK AND PD–T310/WEMXK



10. CONNECTIONS



- Make sure that all of the components are turned off before making connections.

CONNECTING THE OUTPUT CABLE:

Connect the LINE OUT jacks of this unit to the input jacks (CD or AUX) of the amplifier. Make sure that the white plugs are connected to the left (L) jacks and the red plugs to the right (R) jacks.

- Be sure not to connect this unit to the amplifier's PHONO jacks, as sound will be distorted and normal playback will not be possible.

CD-Deck synchro function

If you have a Pioneer cassette deck provided with the CD-Deck synchro function, connect the CD•DECK SYNCHRO jacks of the CD player and cassette deck. With this function, synchro recording can be carried out between player and deck.

- For details on connections and operation, refer to the Operating Instructions supplied with the cassette deck.
- The CD-DECK SYNCHRO cord is not supplied with the CD player.

NOTE:

In order to enable the CD-DECK SYNCHRO recording function, the normal output cable must be connected to the stereo amplifier.

System remote control with a Pioneer stereo amplifier that has the SR mark

(Available with the PD-T310 and Canadian and Australian models of the PD-T510 only: Not available with models for military zones (multi-voltage types))

When a Pioneer stereo amplifier bearing the SR mark is used, connect the CONTROL IN jack on the rear panel of the CD player to the CONTROL OUT jack of the amplifier. This will enable the CD player to be controlled using the remote control unit supplied with the stereo amplifier. If you do not plan to use this feature, it is not necessary to connect CONTROL IN/OUT jacks.

- The control cord is supplied with the CD player.
- The remote control unit supplied with the amplifier can be used to control Play, Stop, Pause, Track/Disc Search and disc change operation.
- For instructions regarding connections and operation, refer to the Operating Instructions provided with your stereo amplifier.

NOTES:

- *When a control cord is connected to the player's CONTROL IN jack, direct control of the player with the remote control unit is not possible. Operate the player with the remote control unit by aiming it at the amplifier.*
- *Be sure to connect both of the control cord's plugs securely to the CONTROL IN and CONTROL OUT terminals. Do not connect only one end of the cable.*
- *Be sure to turn off the power of the amplifier when connecting the power cord and output cord.*

CONNECTING THE POWER CORD:

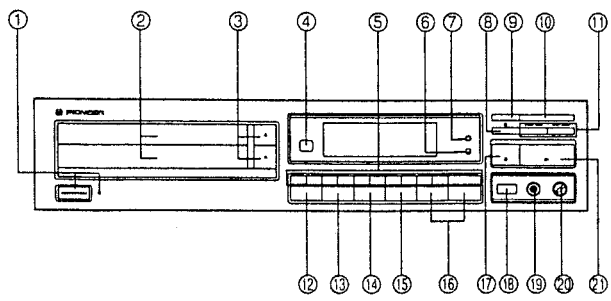
Connect the power cord to a household AC wall outlet or an AC outlet on your amplifier.

- Make sure plugs are inserted fully into the jacks and wall outlet

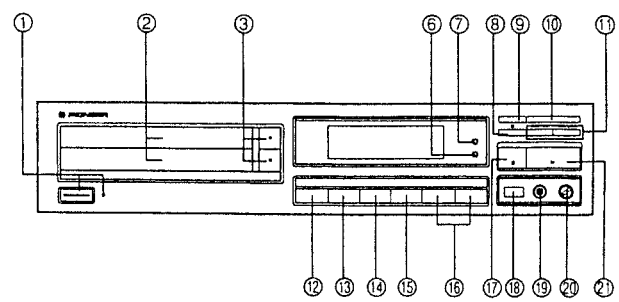
11. PANEL FACILITIES

NAMES AND FUNCTIONS OF PARTS

PD-T510



PD-T310



FRONT PANEL

① **POWER STANDBY/ON switch and STANDBY indicator**
② **Disc trays (DISC I, DISC II)**
③ **OPEN/CLOSE buttons (⏏)**
④ **Remote sensor**
Receives the signal from the remote control unit.
⑤ **Track number/Digit buttons (1 - 10, >10) (PD-T510 only)**
⑥ **TIME button**
⑦ **AUTO EJECT button**
⑧ **Stop button (■)**
⑨ **REPEAT button**
⑩ **RANDOM PLAY button**
⑪ **Track/Manual search buttons (|◄◄ ◄◄/►► ►►|)**
⑫ **PROGRAM button**
⑬ **CLEAR button**
⑭ **COMPU/AUTO EDIT button (•COMPU/••AUTO)**
⑮ **HI-LITE SCAN button**
⑯ **Disc select buttons (DISC I, DISC II)**
⑰ **Pause button (II)**
⑱ **PEAK SEARCH button**
⑲ **Headphones jack (PHONES)**
⑳ **Headphones volume control (LEVEL)**
㉑ **Play button (►)**

NOTE:
Items ⑲ and ⑳ are included on the PD-T510 and the European model of the PD-T310.

12. SPECIFICATIONS

1. General

Type ..... Compact disc digital audio system
Power requirements
European model ..... AC 220 - 240 V, 50/60 Hz
Australian model ..... AC 220 - 240 V, 50/60 Hz
Canadian model ..... AC 120 V, 60Hz
Other models ..... AC 110 - 127/220 - 240 V (Switchable), 50/60 Hz

Power consumption
Canadian model ..... 12 W
Other models ..... 13 W
Operating temperature ..... +5°C - +35°C
+41°F - +95°F
Weight ..... 3.5 kg (7 lb, 11 oz)
External dimensions
PD-T510: All models
PD-T310: European models ..... 420(W) X 276(D) X 101(H) mm
16-9/16(W) X 10-7/8(D) X 4(H) in
Other models ..... 420(W) X 276(D) X 96(H) mm
16-9/16(W) X 10-7/8(D) X 3-3/4(H) in

2. Audio section

Frequency response ..... 2 Hz - 20 kHz
S/N ratio ..... 102 dB or more (EIAJ)
Dynamic range ..... 96 dB or more (EIAJ)
Harmonic distortion ..... 0.003 % or less (EIAJ)
Output voltage ..... 2.0 V
Wow and flutter ..... Limit of measurement (±0.001% W.PEAK) or less (EIAJ)
Channels ..... 2-channel (stereo)

3. Output terminal

Audio line output jacks
Control input/output jacks (available with the PD-T310 and Canadian and Australian models of the PD-T510)
CD-DECK SYNCHRO jack
Headphone jack (with volume control)
PD-T510: All models
PD-T310: European model

4. Functions

Basic operation buttons
- PLAY, PAUSE, STOP

Search function
- Disc search
- Track search
- Manual search

Hi-Lite scan

Programming
- Maximum 24 steps
- Pause

Repeat functions
- 1 track repeat
- All tracks repeat
- Program play repeat
- Random play repeat

Random play (repeat also available)

Continuous music play
- Auto eject play
- Auto eject random play
- Relay-repeat play
- Random relay-repeat play

Switching display
Time consumed, remaining time (track/disc), and total time

Timer start

Peak search

Compu/Auto program editing
Selects the tracks within the specified time.

Digital level control (PD-T510 only)

CD-Deck synchro

5. Accessories

- Remote control unit (PD-T510 only) 1
- Size AAA/R03/dry batteries (PD-T510 only) 2
- Control cord (provided with PD-T310 and Canadian and Australian models of PD-T510) 1
- Output cable 1
- Operating instructions 1

NOTE:
Specifications and design subject to possible modification without notice, due to improvements.